

COMPUTERWORLD

Microsoft casts object net NT to one-up Novell's NDS with transparent data access

By Elisabeth Horwitt

■ Microsoft Corp. revealed new details last week of the object-oriented services environment with which it hopes to leapfrog Novell, Inc.'s NetWare Directory Services. The environment will provide users with transparent and dynamic access to data, images and services across the enterprise.

The system is part of Microsoft's Cairo object extensions to NT, which is slated to ship sometime in 1995, Microsoft spokesmen said.

"This is a quantum leap over existing global directories, such as NetWare Directory Services, which still require users and applications to comprehend the network's functional and logical design" to locate a resource, said Claude King, senior systems analyst at the University of Florida's College of Journalism and Communications in Gainesville.

Building access

In contrast, Cairo will allow the user to build access to a given piece of data, graphic or service into an application so it can be called up at the click of an icon, King said.

Such items are assigned monikers, which an application would always use to call an object, independent of where and on what type of system it resides, said Lyle Griffin, vice president of advanced technology at Micrografx, Inc., a Richardson, Texas, software company.

Microsoft will continue to use the domain-based system it now employs for directory

searches so a moniker would be valid within a domain but might change between domains, he added. However, the moniker's attributes, such as a database or a network protocol needed to access the objects, could change.

As a result, applications always access key items in the same way, even if they have been

Microsoft, page 14

SOUND OFF!



► Buonincontri



► Kruse

Are foreign programmers stealing U.S. jobs?

Yes, says Louis Buonincontri, an American contract programmer who's been burned. But Steven Kruse, who hires out offshore workers, says these coders are a boon to the global economy.

For more on the debate, see In Depth on page 122

IBM gives OK to NT on PowerPC

By Ed Scannell
and Michael Fitzgerald

IBM this week will grudgingly announce support for Microsoft Corp.'s Windows NT on the PowerPC.

The move appears to be a concession to NT's market potential and its ability to undermine OS/2 and WorkPlace OS.

The acknowledgement of NT gives IBM's Personal Software Products group one more thing to worry about in its uphill battle against Microsoft for the hearts and pocketbooks of corporate users.

The announcement also comes at a particularly crucial time for OS/2: For the first time since its inception, the operating system appears to be gaining sales momentum on Intel Corp. platforms [CW, Oct. 18].

NT support on the PowerPC may primarily hurt IBM's emerging WorkPlace OS, a microkernel-based environment that will en-

able the PowerPC to run OS/2, AIX and Windows applications. The move will have minimal impact on OS/2 2.1, which currently works only on Intel platforms.

WorkPlace OS is scheduled to debut on the PowerPC in the first half of 1994. IBM hopes to show off what would be the first beta release at Comdex/Fall '93 this month.

But due to some technical snags, Personal Software Products may not be able to deliver the beta release until the first quarter of next year, pushing delivery of a final product to around mid-1994.

IBM will work with Motorola, Inc. to port Windows NT to its PowerPC-based systems. How long it will take the two companies to complete the port is not clear, although most analysts said they suspect it will be available in the first half of 1994.

While IBM officials continue to say they are not sure just how suc-

IBM, page 16

DELIVERY DATES FOR OPERATING SYSTEMS THAT RUN ON IBM'S POWERPC

AIX
CURRENTLY AVAILABLE

WORKPLACE OS
FIRST HALF OF 1994

WINDOWS NT
FIRST HALF OF 1994

APPLE SYSTEM 7.X
FIRST HALF OF 1994

Enterprise security on deck

By Joanie M. Wexler

A trailblazing effort is afoot to put corporate America on a path to secure its data cohesively across distributed computing environments.

Next week, a fledgling group at Hughes Aircraft Co. will kick off what appears to be the first comprehensive crack at a centralized security scheme for network-based computing, according to sources close to the company.

The U.S. Department of Defense contractor is drawing on its weighty expertise in using strin-



Aside from Unix, Windows NT is the only desktop operating system with plans to integrate the government's Class C2 security scheme.

gent DOD standards to bulletproof its own computers and networks. It is poised to deliver the first in a series of products that collectively protect desktop and networked data.

The official announcement of the plans, which the company confirmed, is scheduled for the Computer Security Institute Show in Anaheim, Calif., this week.

The product is already in use at a number of unidentified government agencies and is in beta testing at some unidentified corporate sites, sources said.

The idea behind the initiative is to combine the various functional levels of security, which exist today largely as piecemeal products, into a cohesive software package that eventually

Security, page 8

Patent office eyes industry aid in vast database plan

By Gary H. Anthes
ARLINGTON, VA.

■ In a bold experiment in government/industry collaboration, the U.S. Patent and Trademark Office plans to sponsor development of an advanced text search and retrieval system for use by itself, other federal agencies and commercial enterprises.

A number of vendors, including IBM, Oracle Corp., Software AG of North America, Inc., Electronic Data Systems Corp. and Thinking Machines Corp., have expressed interest in supplying the system. Oracle has submitted an unsolicited proposal, patent officials said.

The patent office is looking for a system able to offer subsecond response to complex queries against terabytes of text data using massively parallel computers. In addition, the system must be able to filter and tailor data to minimize the amount of unwanted information.

Patent, page 12

Data dilemma

With 1.7 million of its patents now accessible on-line, the U.S. Patent and Trademark Office is hoping to make its documents accessible through a single system

INCOMPATIBLE DATABASES

2.4M FULL-TEXT FILES



5.6M IMAGES



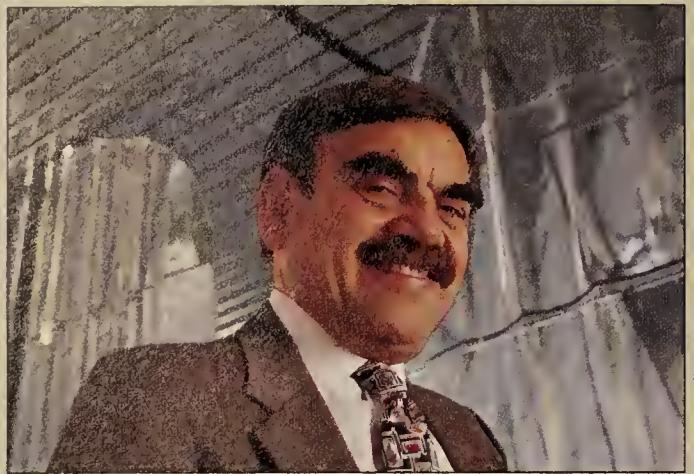
2,000 NEW DOCUMENTS PER WEEK



TOTAL PATENTS UNIVERSAL ACCESS SYSTEM

MANAGEMENT

■ Some negative reviews are starting to come in on Total Quality Management programs. IS executives generally remain supportive of the concept but say implementation can be very tricky. Harvey Shrednick, senior vice president of information services at Corning, warns that customer aversive attitudes can undermine quality efforts. *Page 97*



BOB PROCHOW/SABA

NEWS

- Demand melts as Storage Tek continues to waffle on **Iceberg's** release date. *Page 4*
- Developers and users are less than thrilled with **COSE's Common Desktop Environment**. *Page 6*
- Computer Associates promises delivery of an OS/2-based cross-platform **systems management package** by next April. *Page 8*
- Cray jumps into commercial market with a SPARC-compatible **superserver** that can run RDBMS applications and anchor a network of Unix workstations. *Page 10*
- HP takes direct aim at IBM's mainframes with powerful minicomputers positioned as mainframe alternatives. *Page 12*
- Cisco teams with Microsoft on a desktop-to-enterprise communications push, anchored by a PC-based router from Cisco. *Page 14*
- Novell claims to be far along with an object-oriented network services framework that will far outdo Microsoft's Cairo. *Page 14*
- Compaq leaves no market segment uncovered with its release of **46 new desktop machines**. *Page 16*
- Digital will depend on its DEC OSF/1 operating system to carry Alpha APX architecture into the Unix market. *Page 20*
- Infonet Services offers pay-as-you-go dial LAN service for low-volume mobile computing users. *Page 24*

DESKTOP COMPUTING

- Intel sets up a testing lab to guarantee that systems claiming to be Pentium-upgradable really are. *Page 37*

WORKGROUP COMPUTING

- SAS Institute rolls out major new release of its software, featuring support for new environments. *Page 51*

ENTERPRISE NETWORKING

- IBM reaffirms intent to blend OSF's DCE services into next version of LAN Server. *Page 65*

LARGE SYSTEMS

- Scattershot automation of data centers doesn't work. *Page 77*

APPLICATION DEVELOPMENT

- Don't count CASE out of client/server and distributed environments. *Page 87*

IN DEPTH

- Are foreign programmers undercutting U.S. computer professionals or filling a critical skills gap? It's a raging debate. *Page 122*

CW GUIDE

- New client/server accounting systems pose some real concerns, including price, security and the amount of volume they can handle. *Page 107*



- Buyers' Satisfaction Scorecard:** Of the leading Unix products, Lawson gets the highest marks from its customers. *Page 117* Firing Line evaluators give PeopleSoft Financials mixed marks. *Page 118*

CAREERS

- SQL-92: Relational database development will get easier. *Page 128*

MARKETPLACE

- The calculation speed of project management packages varies considerably — from seconds to hours — making hands-on testing crucial. *Page 137*

COMPUTER INDUSTRY

- EDS reports another slow quarter. Analysts see outsourcing slump. Company points to transitory, company-specific factors. *Page 145*

COMMENTARY

- The last barrier to confident commercial use of Unix is crumbling with the arrival of system utility suites, says Charles Babcock. *Page 6*

- Microsoft is trying to put a good face on the situation, writes Paul Gillin, but it stumbled on NT and may have thrown part of the market to IBM. *Page 32*

- IS has been scrambling to make computing power and communications access free and easy, says Michael Schrage. This is an invitation to waste and abuse. *Page 33*

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Friday Stock Ticker *Page 144*

Executive Briefing

Distributed computing assists from left field. The wait for tools to ease some aspects of client/server and distributed computing won't be as long as expected, thanks to third-party providers and start-ups.

Revelation Technologies beat Microsoft to the punch, producing an object-oriented Windows repository. **Page 4** **Brainstorm Technologies**, a small consultancy, leapfrogged **Lotus** with the announcement that it will deliver a tool next month that gives Visual Basic applications the ability to read and update Notes databases. *Page 4* And two start-up companies, **Forte** and **Dynasty**, are promising a whole new breed of object-oriented client/server tools that generate cross-platform code. *Page 28*

CASE role in client/server. It's probably a mistake to dismiss CASE as an important component of client/server development. Users and analysts say products have improved considerably and help to provide structure and consistency across platforms. *Page 87*

Power to the users...someday. Creating systems that embody business rules in a way that is accessible and amendable by end users will soon be an absolute must because programmers can't keep up with the pace of business changes, says Jim Stikeleather of **Kash n' Karry**. But there are big obstacles on this road. *Page 33*

Bugs, viruses and hackers got you worried? It just got easier to find out exactly what you're up against. A forum on the Internet has been devoted to collecting information about such risks for some time, and now that group is making its listings available by fax for those who aren't wired into the 'net. *Page 38* In the meantime, cellular carriers are using knowledge-based systems to fight toll thieves, and there's hope these technologies may eventually help secure wireless data transmissions. *Page 71*



Compression breakthroughs: Good news for DOS shops that want OS/2 but don't want to give up the option of using their DOS compression features. **Stac Electronics** is planning a Comdex announcement of a utility that permits easy transfer of compressed data between DOS and OS/2. The utility will be bundled with its OS/2 compression program, Stacker. It's amazing what you can fit in a thimbleful of space these days. The new **64M-bit dynamic RAM chip** from IBM and Siemens AG can hold up to 6,400 pages of double-spaced text. *Page 37*

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Users cooling to oft-delayed Iceberg

By Johanna Ambrosio

Storage Technology Corp.'s continued waffling on delivery dates for its long-awaited Iceberg storage device has resulted in as much as a 10% slippage in demand for the product, which is now expected to ship in quantity "early next year," according to a company manager.

The sixth delay since the product's introduction in February 1992 was quietly announced with the company's third-quarter financial report Oct. 14.

Last week, Chauncey Schwartz, product marketing manager for Iceberg, said 5% to 10% of the initial 150 orders for the product are no longer on the books.

Based on a study of Iceberg orders conducted about three months ago, the backlog has slipped to 10% for "people who needed [disk storage] before we were available," he said.

One customer who could no longer wait is Howard Sorgen, senior vice president at Merrill Lynch & Co. in New York. "Our interest was piqued when Iceberg was announced. But we made our bed with other vendors, and we're

happy with the decision," he said.

The vendors include EMC Corp. and its Symmetrix device, a major competitor to Iceberg announced in November 1992 that has shipped 2,500 units. IBM is expected to announce an Iceberg competitor in February, analysts said.

Iceberg is a redundant arrays of inexpensive disks (RAID) device that will store up to 400G bytes of compressed data for mainframes. Performance data has not yet been released.

Schwartz would not comment on the reasons for the delays, saying only that the company met its most recent goal of starting internal beta-testing July 23. In August 1992, a company official had attributed the delays to problems with the software that controls the RAID-specific features of the machine.

Executives at the Louisville, Colo., firm are not speaking publicly about the Iceberg schedule or what the problems are, in large part because of a shareholder lawsuit filed against the company in April 1992.

Schwartz did say Iceberg is "working" and that the company is putting the device through "final integration testing." The Oct. 14 statement said customer beta testing will be conduct-

ed this fall — meaning by late December — and that the company "expects to begin early customer shipments by year end." One prebeta version of the machine has been shipped to a customer Schwartz would not identify.

Too little, too late

By the time Iceberg does ship, some analysts said, it may be too late to capture the market StorageTek sought.

"The window of opportunity has largely closed for the high-performance market" because of the strides EMC has made with Symmetrix, said Robert Callery, an analyst at International Data Corp. in Framingham, Mass. Still, he said, some large customers that need fault-tolerant disks may find Iceberg attractive.

Schwartz responded that user interest is still high, and he and his marketing team are asked to give three to five customer presentations daily.

One customer willing to give Iceberg a chance is Wayne Pattison, director of data center operations at Kansas City Railway Co. in Kansas City, Mo. "We're very interested in the concept, but it's got to work. We'll see what happens when it gets to market," he said.

Application tools on tap for Notes

Firm readies Visual Basic tool

By Michael Vizard

CAMBRIDGE, MASS.

A small consultancy plans to deliver a tool that will allow Visual Basic applications to read and write to a Notes database almost a year before Lotus Development Corp. is scheduled to deliver Notes application development tools that support the Basic language.

Brainstorm Technologies, Inc. in Framingham, Mass., plans to deliver VB/NotesLink at the LotusSphere users' conference next month. It will give developers the ability to build Visual Basic applications that can read and update Notes databases. Those same applications will be able to read and update most SQL databases using standard Visual Basic calls.

"The Notes programming environment isn't as powerful in terms of creating user interfaces as the SQL tools and Visual Basic are," said Brownell Chalstrom, president of Chalstrom Consulting, Inc. in Oakland, Calif., and a former member of the Notes group at Lotus.

And industry analysts said large numbers of Notes sites are already struggling with Notes and SQL database integration. "It's an issue a lot of people already have and one that everybody will have over the next two to three years," said Dave Marshak, an industry analyst at the Patricia Seybold Office Computing Group in Boston.

Lotus previously said it intends to support Visual Basic and LotusScript, a derivative of Visual Basic currently under development, as part of its notebook application development environment. LotusScript will be supported in Notes 4.0, which is due in the second half of next year [CW, Oct. 4].

Deal with Gupta

At the same time, Lotus announced a deal with Gupta Corp. last week under which Gupta's tools will be able to read and update Notes databases in addition to SQL databases [CW, Oct. 25]. However, Gupta will not deliver that capability until the third quarter.

As a result, the Brainstorm offering will be the only tool available in the near term, short of custom programming in C, that will allow developers to create applications that work against both SQL and Notes databases.

Currently, Johnson & Higgins, an insurance brokerage firm in New York, is using C to integrate Notes databases with a database running on an IBM AS/400. Once accomplished, Johnson & Higgins intends to roll up data from the Notes database into the AS/400 database, which will then give the company a central resource from which to write reports for its clients, according to Assistant Vice President Dennis Richter.

Johnson & Higgins will postpone as much of this effort as possible in favor of waiting for the Gupta tools, which it already uses. The company, however, will continue to proceed with its C development work until the Gupta tools arrive.

Marshak added that giving developers the ability to use their existing languages with Notes will be of paramount importance to Lotus as it seeks to increase Notes penetration at customer sites.

Object-oriented tools

Revelation pushes into repository arena

By Michael Vizard

While Microsoft Corp. ponders plans for an object-oriented repository, one of its rivals last week beat it to the punch by unveiling a repository that will support derivatives of the Basic, C and C++ programming languages.

Called OpenInsight 2.0, the object-oriented repository from Revelation Technologies, Inc. in Stamford, Conn., is one of the first tools aimed at fostering team-oriented application development in PC environments.

"The idea is to provide a central source where you can change something and have that change implemented everywhere it is used," said Chris LeToeq, an analyst at Computer Intelligence/InfoCorp in San Jose, Calif.

For example, Natural Gas Clearinghouse in Houston has more than 200 workstations running a DOS application that schedules the movement of natural gas across the U.S. In the next year, the company plans to use OpenInsight to migrate all the DOS applications running on those systems to Windows, as opposed to using a custom program it created to share libraries across DOS applications, said Jiminy Seranuo, supervisor of the information systems group charged with building the company's accounting and trading system.

Similarly, Q.D. Systems, Inc. in Berkeley, Calif., will use OpenInsight to move a clinical application for doctors' offices from DOS to Windows. "For us, it's a lot cheaper to share a common master die-

ctionary for DOS and Windows applications in the same repository," said Vice President Fred Dietrich.

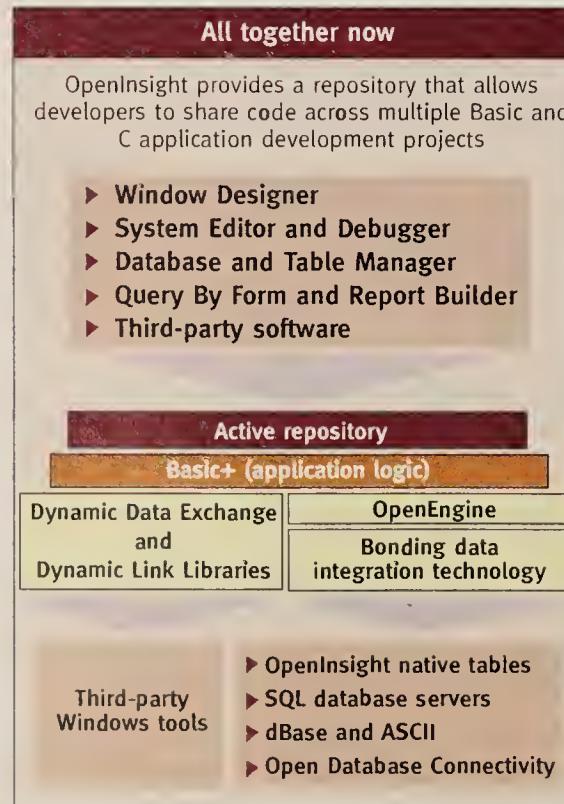
The challenge for Revelation will be to establish its repository before rivals can leverage their stronger positions in the Windows application development arena. For example, Magic Software Enterprises, Inc. in Irvine, Calif., already offers a repository running on high-end servers capable of supporting DOS applications [CW, Sept. 13], and Microsoft executives recently said they are evaluating a move into the repository market [CW, Oct. 18].

Other companies such as Gupta Corp. and Powersoft Corp. are expected to expand their data dictionaries into repositories as part of their Windows-based application development environments. Users can expect similar initiatives from companies such as JYACC, Inc., Unify Corp. and Uniface Corp., said Mitch Kramer, an industry analyst at the Patricia Seybold Office Computing Group in Boston.

But reinventing mainframe application development environments for PCs will require more than just repositories, Kramer said. "You have to make sure you need a mechanism for version control," he said.

"The PC flavor of repositories aren't as sophisticated as what you would expect to see on mainframes, which are designed to support a vast number of people. The PC repositories are good for individual and small workgroups of developers," LeToeq added.

Pricing for OpenInsight is \$249 through December, after which the price is \$895.

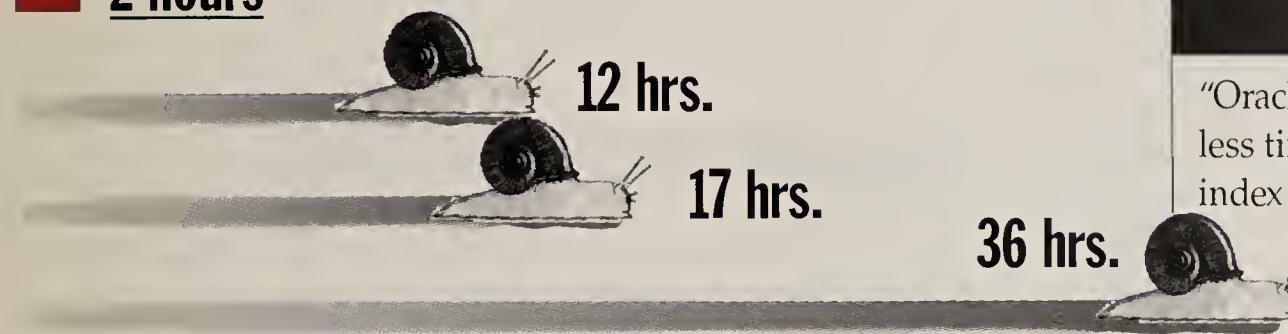


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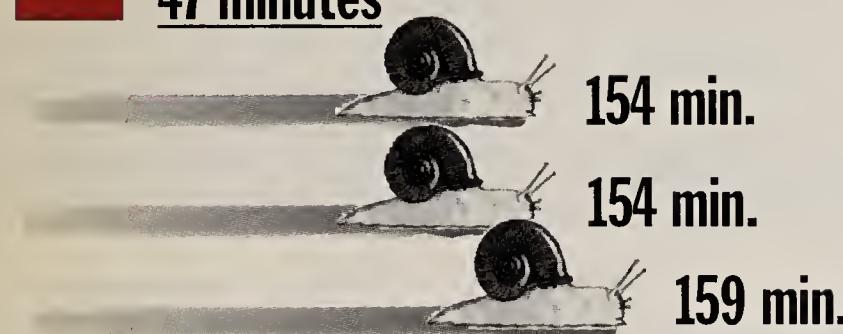
LOAD AND INDEX

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PC Magazine

ORACLE7

■ **47 minutes**



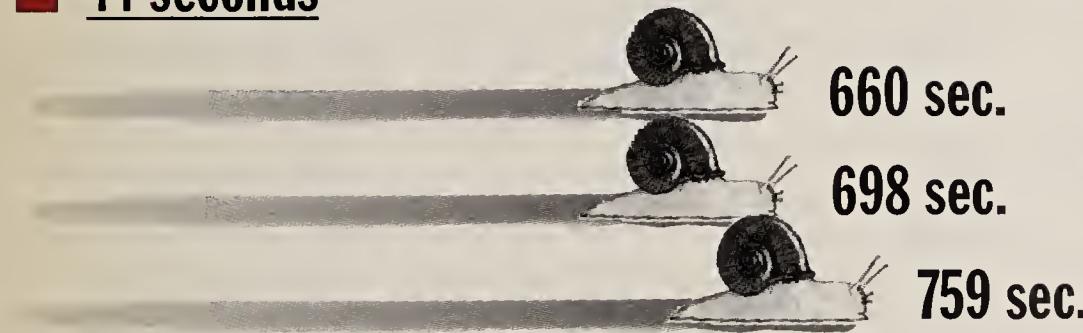
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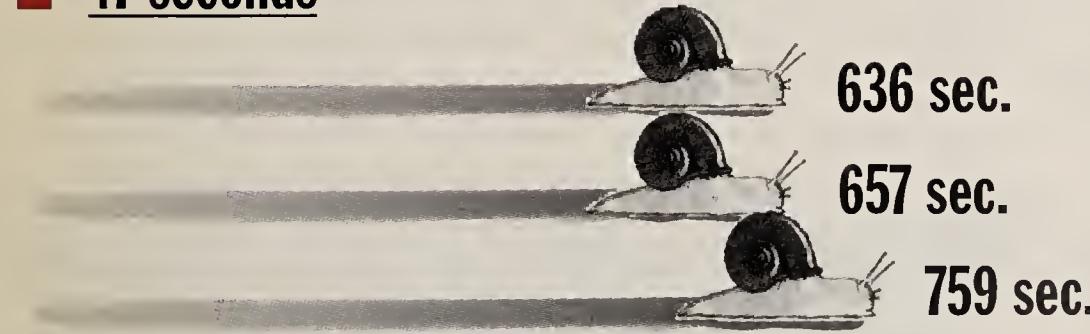
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■ **47 seconds**



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Ingres Server "...we would not recommend it because of the showstopping multi-user bug we encountered."

Gupta SQLBase "...took an unthinkable 60 hours to load the tables and then crashed on the index builds..."

For your copy of the complete PC Magazine article,
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ORACLE

Filling the holes in Unix system

It has been years since Unix was proclaimed ready for prime time, but there's always been a major barrier to its acceptance as a commercial system — the lack of a supporting suite of utilities to make the operating environment more manageable. Finally, however, that barrier is falling.

System utilities were one of the underrated achievements of legacy systems. Anyone who has ever watched IBM's MVS spew out a mind-numbing torrent of messages could understand the value of a utility that noted the exceptions and called them to the system operator's attention. In addition, scheduler utilities ran jobs in the right sequence. Chargeback utilities told the IS manager which departments owed how much for system use. Performance monitors indicated when the system was heavily loaded. Other utilities automated backup or did trend analysis based on system statistics. All these utilities make the environment more predictable and the life of a system manager more livable.

Unix, which was designed more as a developer's system than

for running business tasks, lacked many of these features. Hewlett-Packard wanted to advance the use of Unix in commercial organizations but found "business people wanted to know if these utilities were available," says Gina Cassinelli, HP's Mainframe Alternative Program manager. In too many instances, there were holes, including HP's own HP/UX.

Traditional Unix customers were skilled computer users rather than business people, and they didn't view the absence of a few utilities as a shortcoming. Unix offered system resources to developers in scientific/engineering circles without bogging them down in cross-checking or system safeguard techniques. Consequently, Unix would write over backup data on a tape drive when it needed more storage, or would speed up writing data to disk as space grew short, moving the system along more efficiently toward a crash.

Unix's Cron utility schedules the work load based on time of day and date, with no provision for checking whether requisite jobs have been completed. It's difficult to handle messages from the operating system automatically, so they get handled by a human operator or not at all. It's even difficult to print out part of a report rather than the whole thing. And there's no concept of a common database for system statistics.

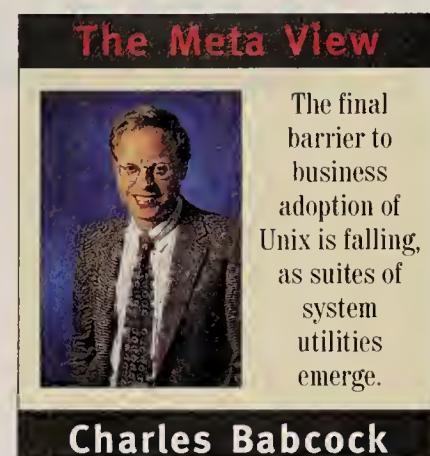
To be sure, a lot of spot utilities have sprung up but they come from different vendors and may work with only one version of Unix. Creating a utility set that both meets a comprehensive set of system management needs and works across Solaris, System V.4, HP/UX, AIX, OSF/1 and The Santa Cruz Operation Unix is a tall order.

Several third-party software houses are now trying to fill the gaps, however, including Raxeo Software in Rockville, Md., Computer Associates in Islandia, N.Y., and OpenVision, a one-year-old start-up in Pleasanton, Calif.

OpenVision, which launched its product line in June, purchased nine utility companies and licensed the products of two others in order to create its own utility lineup. That lineup will ultimately consist of 27 utilities with common database underpinnings through IIP's OpenODB as a front end.

Raxeo converted utilities on Digital VAXes to the Unix market. CA rewrote its existing line of mainframe utilities in C, sometimes combining the features of two similar packages into one product. These firms are adding common graphical front ends to their utilities, making them easier to learn and use.

With products like these available, commercial system managers may finally have the incentive they need to make the move from their legacy systems to Unix.



Charles Babcock

Unix compatibility

COSE delivers interim CDE code

By Jean S. Bozman

SAN JOSE, CALIF.

Corporate developers had better get to work quickly on the Common Desktop Environment (CDE) unveiled at last week's Common Open Software Environment (COSE) conference here because the code distributed on CD-ROMs here is designed to self-destruct in April.

COSE developments

CDE is a collection of user interface technologies from COSE member companies knit together into a set of APIs, file formats and other components

Mail Calendar Text editor Window shell Icon editor App builder

Desktop manager

Workspace manager Window manager

File manager

Session manager

Desktop Foundation Services

Help Mail Calendar Widgets Printing Text editing

Motif

X Printing

ToolTalk

The X Window System

Operating system environment

Source: X/Open Desktop Working Group

COSE members IBM, Hewlett-Packard Co., SunSoft, Inc., Novell, Inc. and The Santa Cruz Operation plan to upgrade tool kit replacements by then. They said they also hope to integrate the CDE specs into their Unix desktops, which would allow all Unix systems to have a common look and feel (see chart).

CDE code elements include HP's Visual User Environment, the Open Software Foundation's (OSF) Motif 1.2 graphical user interface, a desktop manager from Novell, IBM's Common User Access shell and SunSoft's ToolTalk object-oriented interapplication messaging tool kit. Developers are supposed to write to the CDE application programming interfaces (API), even though COSE members noted the CD-ROM CDE code is nearly complete.

"We would expect to have CDE in our products by the first half of next year," said Bill Filip,

president of IBM's Advanced Workstations and Systems division in Somers, N.Y. "By the second half of next year, we'd certainly expect widespread availability of CDE across the industry."

COSE delivered more than 1,000 free copies of the CDE tool kit on CD-ROM to corporate software developers and independent software vendors here last week. Upgrades optimized for each vendor's operating system will be available by April.

COSE members said they want to jump-start independent software vendor development of Unix desktop applications and hope a groundswell of applications will allow Unix to better compete with Microsoft Corp.'s Windows NT environment. "The CDE code, together with the Unix Spec 1170 [API], is about 95% of the code that is important to the [independent software vendor]," said Don McGovern, vice president of corporate strategy and business development for Novell's Unix Systems Group.

Help demanded

But many independent software vendors, who were among the 1,200-plus Unix developers in attendance, seemed skeptical that CDE's new look and feel would re-

duce the amount of required coding. "I don't understand why you can't use the same widgets as OSF uses in Motif 2.0," one attendee told a CDE developer's panel. Another pleaded for simplicity in the CDE code. "We want some help with this," he said. "We don't want more choices. This is coming to your desktop soon, and I'd like to get it done without pyrotechnics."

Still, some independent software vendors said CDE would broaden their business prospects. "We want to minimize the work needed to port our software to other platforms," said Lionel Simon, director of product engineering at Renaissance Software, Inc. in Los Altos, Calif. Others said they wished CDE specs had come out earlier. "If I knew something was going to be standard in a year, I wouldn't have thought about developing it," said Larry Headlund, president of Eikon Systems in Boston.

Out in left field

While developers debate the pros and cons of CDE, some large users asserted that they should have been included earlier in the COSE process.

Without early involvement, users must flip through pages of specifications before raising questions and providing feedback, said James White, vice president of technical planning at San Francisco brokerage Charles Schwab & Co., Inc. and a COSE conference speaker.

"A lot of the needless differences [between Unix systems] should go away [with COSE and CDE], which makes our job easi-

er," White said. "But there are some potential 'gotchas' in that users were [involved] relatively late in the process, and the specifications are too detailed." More important to users, he said, is knowing the total cost of installing and maintaining CDE applications.

Novell's Don McGovern said the original game plan was for CDE and the 1,170 common Unix APIs to be announced simultaneously. But Novell underestimated the amount of negotiation it would take to reach agreement on the Unix brand name it granted to X/Open Co. and on the Spec 1170 standard, McGovern said [CW, Oct. 18]. And CDE was the only product suite that was agreed to when the COSE alliance was announced earlier in the year. —Jean Bozman



Take Command of System Managed Storage

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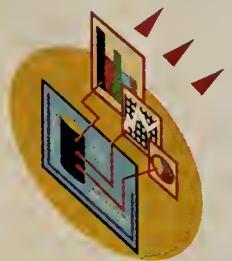
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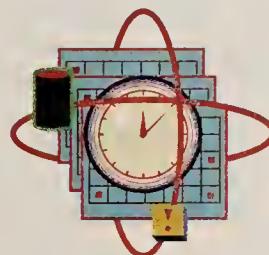
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News Shorts

Strassmann lands at Ernst & Young

Paul Strassmann, the former chief information officer at the Department of Defense and Xerox Corp., last week joined Ernst & Young's Center for Information Technology and Strategy in Boston as a research fellow. He will continue work on his return-on-management methods for evaluating alternative information technology investments. Ernst & Young will get exclusive implementation rights to the Strassmann methodology, according to an Ernst & Young spokesperson.

Bell Atlantic hires Skinner

Bell Atlantic Corp., the Baby Bell that made big headlines when it announced its merger with cable TV giant Tele-Communications, Inc., has hired Larry Skinner, formerly of Texas Instruments, Inc., as its vice president of business processing. The post gives him responsibility for business re-engineering at Bell Atlantic's telephone companies, network services and corporate information systems, according to a spokesman for the Philadelphia-based company.

IBM announces another down quarter

As expected, IBM last week announced a net loss of \$48 million for its third quarter ended Sept. 30 [CW, Oct. 25]. This compares with net earnings of \$86 million, before restructuring charges, for the same period last year. Revenue stayed flat, at \$14.7 billion. Services revenue increased by 26.5%, while software revenue fell by 3%. Hardware revenue fell by just 1%, with PC revenue increasing "significantly" and workstation revenue declining. IBM would not provide more details. Separately, IBM Credit Corp. reported revenue of \$37.7 million, compared with \$55.9 million for the third quarter in 1992, largely because of an increased federal tax rate, the company said.

Canada Post taps SHL for client/server

Canada Post Corp. last week signed off on its massive client/server outsourcing deal with SHL Systemhouse, Inc. The contract, valued at about \$1 billion, calls for Systemhouse to replace some 9,000 IBM 3270 terminals with PCs. The parties have not yet committed to a server operating system, so the project is shaping up as a Unix/Microsoft Corp. Windows NT showdown. Canada Post and Systemhouse also formed a joint venture to market the fruits of their labors to other postal agencies and to commercial enterprises.

Clinton calls for health report cards

President Clinton released his proposed Health Security Act last week, calling for electronic medical billing, standardized insurance claims, data-intensive "report cards" on the quality of care and a law protecting the privacy of medical records. The Clinton plan explicitly states that the Health Security Card will not be a smart card, but rather a magnetic-stripe card carrying only administrative data.

Client/server bundles from Borland

Borland International, Inc. this week will launch a promotional program under which it will bundle its Paradox database with its Interbase SQL database for \$995 through March 31. The program is intended to get IS managers to deploy Paradox on user's desktops as a front-end query tool for accessing the Interbase relational database management system.

SHORT TAKE Microsoft began shipping on schedule last week the beta version of its NetWare Workstation Compatible Service, which allows Microsoft's Windows NT to access Novell, Inc. NetWare servers. A commercial version is due out by year's end.

More news shorts, page 16

Systems management

CA-Unicenter goes cross-platform

By Thomas Hoffman

CHICAGO

Computer Associates International, Inc. has latched its systems management client/server strategy onto a star.

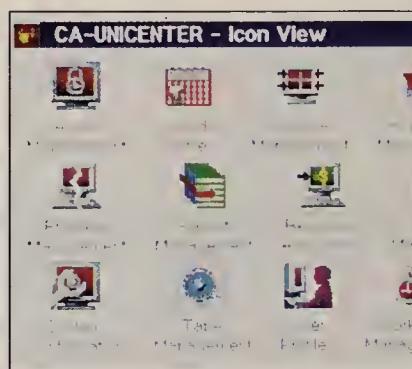
The Islandia, N.Y., software giant last week announced plans to deliver CA-Unicenter/Star, an IBM OS/2-based client/server package designed to manage multiple heterogeneous environments across a network from a single workstation [CW, Oct. 25].

CA-Unicenter/Star, announced here before 1,500 attendees at CA's Systems Software conference, is slated to enter beta testing in December. A production version should begin shipping by the end of the first quarter next year, said Jay Yesselman, director of CA's systems management strategy.

Although users and analysts hailed the vendor for its ambitious plans to deliver one-stop systems management tools, CA-Unicenter/Star does not come without its caveats.

For a systems shop to manage mixed, distributed environments, such as Hewlett-Packard Co.'s HP/UX, Microsoft Corp.'s Windows NT and IBM's OS/2, from a single workstation, server versions of CA-Unicenter for each of those environments are required.

Users said their companies would have to evaluate the costs of the necessary "enabling" software before making a decision on the package. Pricing "is something we're going to have to look at," said M. Nicholas Lovelace, an



CA-Unicenter/Star provides singular view into networked systems

IS review officer at Connecticut Mutual Life Insurance Co. in Hartford, which is not currently using any version of CA-Unicenter.

"It's difficult to put the price of this [required software] against years of investment in training. The costs are something our financial folks will look at, but I'm sure that we will be able to make a persuasive argument to justify it for our company to remain competitive since it should reduce the time and costs of additional training,"

said Ross Markley, a systems engineer at Norwest Technical Services, Inc., the technology arm of Norwest Corp., the Minneapolis-based banking conglomerate.

The OS/2-based CA-Unicenter/Star will be priced at \$995, according to Charles B. Wang, CA's chairman and chief executive. A Windows-based version will go into beta testing in the third quarter next year and will also cost \$995. However, users who wish to co-manage their IBM MVS Group 40 systems will have to plunk down \$15,000 for an MVS server version of CA-Unicenter.

Forthcoming server ports of the systems management package for OS/2 and Novell, Inc.'s NetWare environments will be priced at \$1,000 per server, according to Yesselman. Pricing for other Unix platforms has not yet been announced.

CA's one-stop systems management plans are a full six months ahead of product strategies from competing vendors such as Legent Corp. and Tivoli Systems, Inc., according to analysts. "As far as something that goes cross-platform, there really isn't a lot out there that compares with CA-Unicenter/Star," said Jonathan Eu-nice, research director at Illuminata, a Pittsburgh systems software technology assessment firm.

Security

CONTINUED FROM PAGE 1

will run across all desktops and network types without requiring changes to existing applications.

For example, the federal government-advocated Clipper chip addresses only one level of security: the encryption, or key-based scrambling, of data in transit. Optional encryption would be one component of the Hughes software, which would also bundle in several other security layers beginning with user authentication.

Security is No. 1

The enterprise approach to security is of the greatest concern to companies with mission-critical data and to those migrating from mainframe-based environments where security has been airtight for years, said Katrina Leinbach, a senior consultant at Aberdeen Group in Boston, who was briefed by Hughes.

For example, "Security is the No. 1 priority of everyone I know in my business today — the business of client/server computing and distributed networking," said Bruce

Russell, director of corporate technologies at Amex Life Assurance Co. in San Rafael, Calif., which has been moving to a LAN internet-work from host-based computing over the past couple years.

An outstanding security gap, Russell said, is "protecting everything at one time" rather than requiring multiple log-ons and passwords for access to various environments — what he said is a more vulnerable approach.

Others considered the Hughes effort on the right track, but had reservations about the enormity of the task.

"We have 20 different systems, all with their own security, and it would be very nice to have a single structure handling all the back-end work," said Jim Queen, director of enterprise networking at Enron Gas Services Corp. in Houston. "But I'd be real surprised if someone came up with a unified way to secure all our systems."

New rules

Hughes' first offering, NetLock, will secure Sun Microsystems, Inc. Unix workstations and the TCP/IP networks enabled by the communications functions embedded in the Unix kernel. NetLock will

check data integrity and allow network administrators to set rules as to what systems are authorized to communicate with one another and to optionally implement encryption schemes.

The Sun version is slated to ship on Dec. 1, followed by NetLock for Novell, Inc.'s NetWare environments in the second quarter of next year. Security packages for desktop operating systems will emerge in 1994.

Continuing concerns

Some users had outstanding concerns that Hughes was unavailable to address last week.

"My first take is these products, coming out of a government entity, will carry tremendous overhead," said Michael Higgins, technical support manager at Byer California, a San Francisco clothier.

Higgins said, for example, that he tested Oracle Corp.'s Oracle Trusted System — which requires the same federally mandated security features as the Hughes initiative — but it was not worth the processing power drain.

"It does work, though. It is absolutely bulletproof, but you could end up using a Cray to protect your PC," Higgins said facetiously.

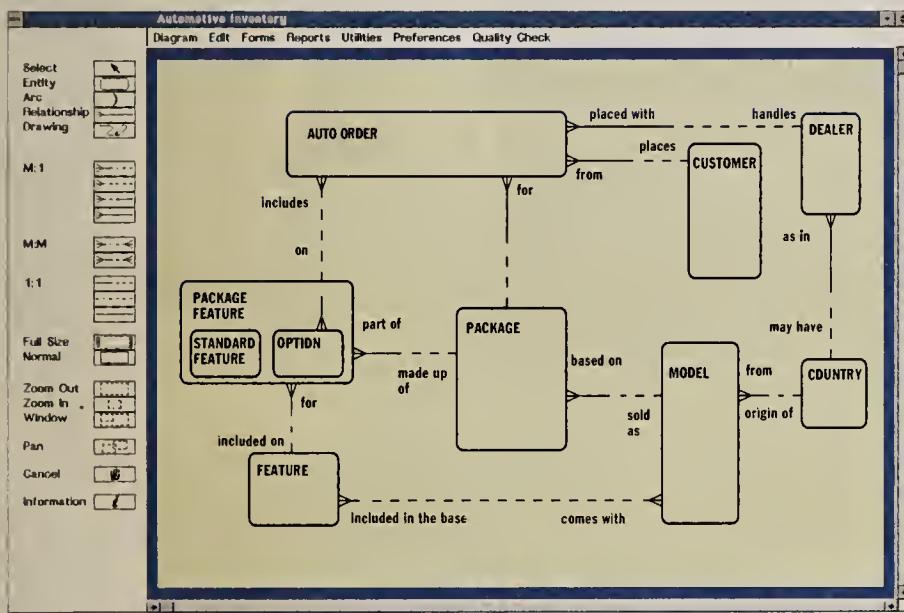
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Specifications & Features	
Category	Description
Engine	Type: 3.0 Liter DOHC 24-Valve V-6 Engine
	Horsepower: 270 Horsepower At 7100 RPM
	Torque: 210 Foot-Pounds Of Torque At 5300 RPM
Exterior	Paint: 4-Coat, 4-Bake Paint
	Spoiler: Body-Integrated Rear Spoiler
Interior	Comfort: Automatic Climate Control
	Stereo: Bose(R) Music System
Mechanical	Transmission: 5-Speed Manual

Purchased Options:

<input checked="" type="checkbox"/> Car Phone	\$ 2,250.00
<input type="checkbox"/> Anti-theft	\$ 1,300.00
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ORACLE

Cray Research gets commercial SPARC

By Jean S. Bozman
BURLINGAME, CALIF.

Cray Research, Inc. stepped into the commercial market last week with the announcement of a \$400,000 SPARC-compatible superserver that can run relational database applications and anchor a network of Unix workstations.

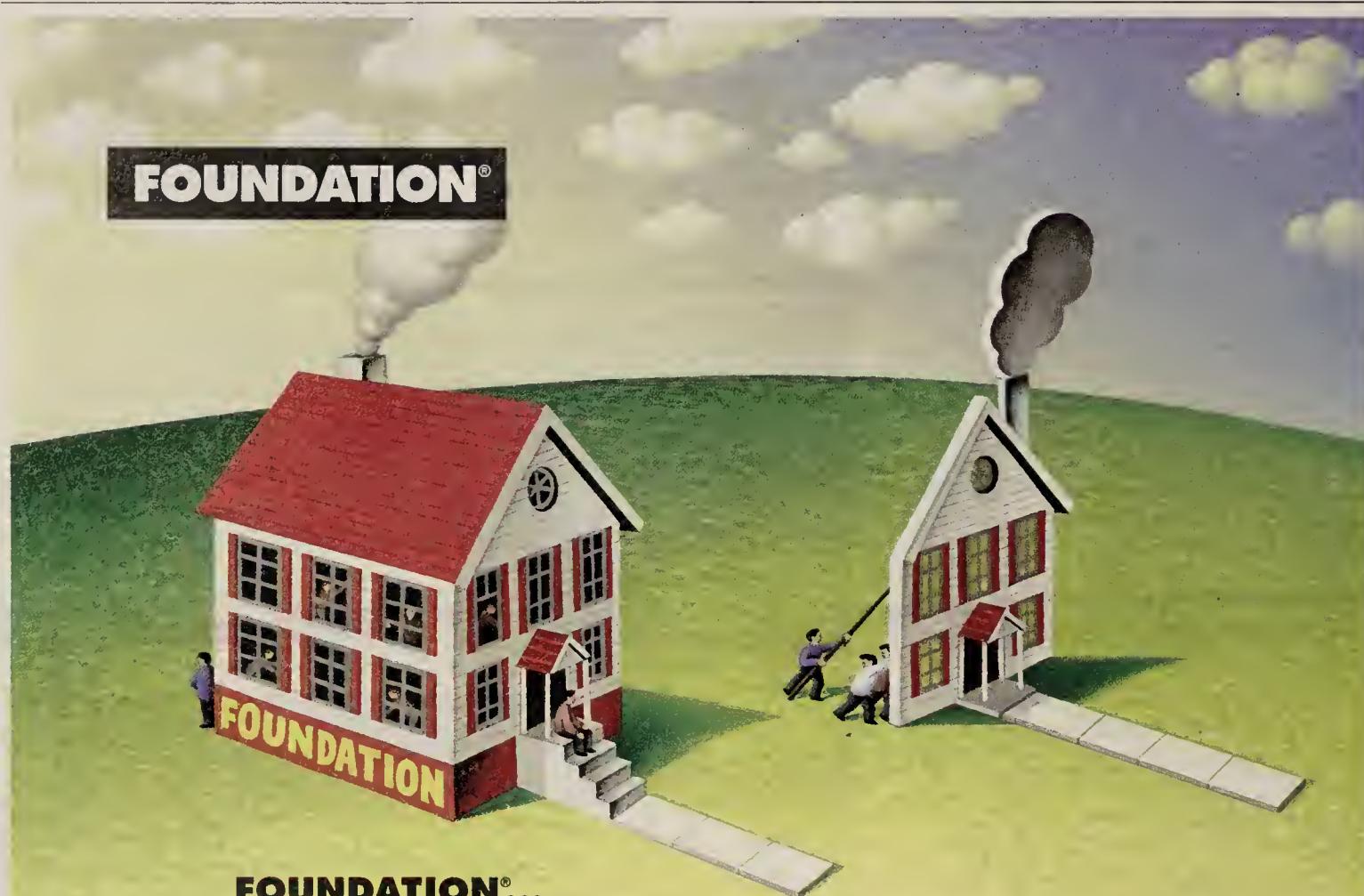
The symmetrical multiprocessor machine, the CS6400, will be sold by a Cray Research unit called Cray Research Superservers and Sun Microsystems, Inc.'s SunIntegration Services organization.

Sun Chief Executive Officer Scott McNealy said the 64-way Unix machine would complement Sun's workstations and SPARCserver 1000 and SPARCcenter

2000 machines, which top out at 20 processors. "We think we'll sell a lot more SPARCClassics every time they sell one of these," he said. McNealy was alluding to the pull-through sales of X Window System terminals and workstations, which will need access to the large amounts of data stored on the multiprocessing machine.

"We're creating a seamless computing environment between Sun and Cray," said Lester Davis, Cray Research's chief operating officer, referring to the binary compatibility of Sun and Cray Research systems.

The CS6400 also has software links to IBM-compatible mainframes and to Cray Research supercomputers, said Martin Buchanan, general manager of Cray Research Superservers. Initial target markets will be in the auto, oil, financial, tele-



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Superservers	
CS6400	
CPUs	4 to 64 SuperSPARC RISC processors
OPERATING SYSTEM	SunSoft's Solaris 2.3
MAIN MEMORY	Up to 16G bytes
SYSTEM INTERCONNECT	4 XD-buses
I/O CHANNELS	Up to 16 S-buses
ADDRESS	Up to 2T bytes of on-line disk-drive memory
VOLUME SHIPMENTS	First-quarter 1994
PRICE	\$400,000 to \$2,500,000

communications and electronics industries and government, Buchanan said.

Sun partnered with Cray Research because it does not intend to create its own 64-way Unix server, McNealy said. "Our focus has been on \$5,000 to \$25,000 desktops and the two- to 20-way [symmetrical multiprocessor] machines," he said. "We see lots of upside to our revenues by staying in those price/performance ranges."

No immediate need

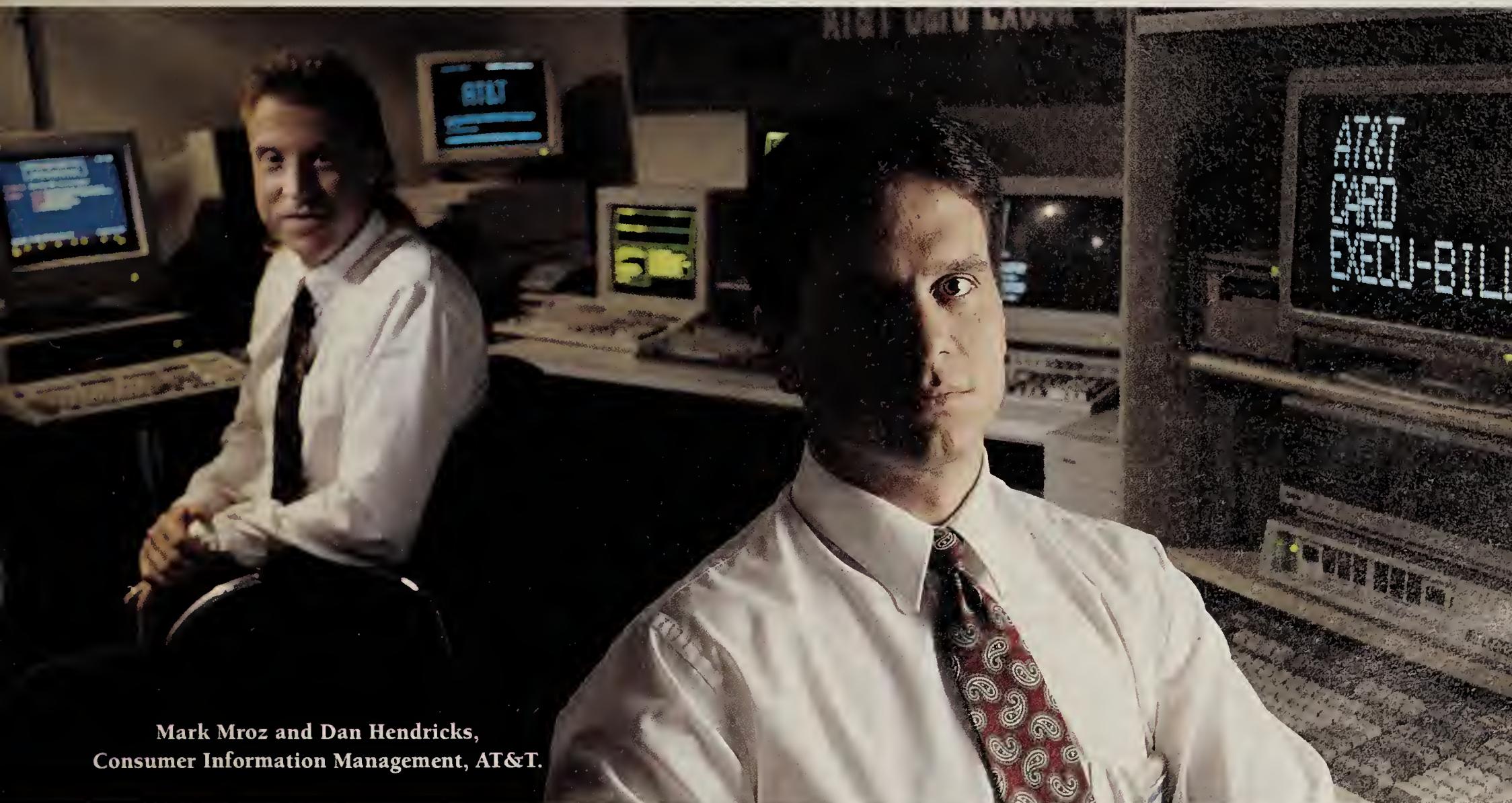
At least one Sun user said he does not require the horsepower in the CS6400 — yet. "I still have a lot of headroom in my SPARCserver 1000 and SPARCcenter 2000 machines," said Pompi Malik, manager of information services at Brewers Retail, Inc. in Mississauga, Ontario, which uses high-end Sun servers to run its cross-province retail chain. "I can see how it could be the main computer for accessing corporate-level information, but somehow that seems to go against the entire distributed computing paradigm." He was alluding to Sun's stance against large-scale systems.

However, a centralized Sun-compatible server could be a fast, computer-intensive engine for database applications, said Stan Hanks, president of the Sun Users Group. Users could access centrally stored data through the X terminals.

"The big stick the mainframe guys have used to beat the workstation guys is the lack of data bandwidth [on workstations]," Hanks said. "Now, you've got a computational engine that can be logically partitioned into multiple machines that have virtually instantaneous communications between them."

Industry analysts said they see a narrow market for the machine, although it fits the needs of Wall Street workstation aficionados who do a lot of number-crunching and data analysis.

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**Mark Mroz and Dan Hendricks,
Consumer Information Management, AT&T.**

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HP to deliver power-packed minis

By Mark Halper

Hewlett-Packard Co. this week will unveil its most powerful minicomputers ever in a price/performance uppercut intended to send IBM staggering further into the mainframe ropes.

Users said the move will also invigorate HP's own sluggish mainframe-alternative program.

The new versions of HP's Corporate Business Systems will incorporate the 90-MHz rendition of the company's PA-RISC microprocessor. It is a step up from the 60-MHz PA-RISC chips that HP uses in the original version of the line, commonly known as Emerald, which was introduced in May 1992.

Extra scalability

In a surprise move, HP will announce that Unix versions of the Corporate Business Systems will scale up to 12 processors. Earlier indications were that processor support would top out at eight [CW, Oct. 18]. Proprietary models running HP's MPE/IX operating system will scale up to eight processors, HP said. Currently, all Corporate Business Systems run a maximum of four processors.

HP said a six-processor version of a 7100-based Unix box scored 2,110.5 trans./min. under the Transaction Processing Council's benchmark parameters running an Informix Corp. relational database. An eight-processor Unix box running Oracle Corp.'s Oracle 7 will churn 1,500 trans./sec. compared with a previ-

Pushing the envelope						
HP is extending the performance of its Unix and proprietary systems						
Product	Transactions per second	Maximum users	Standard memory/maximum memory	Maximum disk space	List price	Shipment date
HP 9000 (1-12 processors) HP/UX	1,500* (on 8-way)	4,500	256M/2,048M bytes	1,900G bytes	\$165,000-\$660,000	Dec. 1993 (up to 8-way); Q1 (9- to 12-way)
MPE/IX	1,500+ (995/800)	2,700	256M/2,048M bytes	2,040G bytes	\$223,500-\$679,300	First half 1994

*Hewlett-Packard Co. estimates

ous HP Unix high of 700 trans./sec., the company estimated.

With the new models, HP is also taking severe pricing action. It set the retail tag for a single 90-MHz processor Unix version at \$165,000, essentially offering the machine for the same price at which it has been selling single-processor 60-MHz boxes. It set pricing for a 12-processor Unix box at \$660,000. Until last summer, when HP implemented price cuts in preparation for this week's announcement, that was also the price of a four-processor machine.

The company said it is phasing out all but the single-processor version of the 60-MHz line, and it is cutting the price of that box to \$120,000.

Pricing for MPE/IX versions ranges from

Speed demon

While the 7100 chip runs at a raw speed of 96 MHz, Hewlett-Packard slows it to 90 MHz to conform to the 30-MHz increments of the Corporate Business System's backplane. HP takes the same approach for lower-end boxes.

office's budget for the project or an estimated cost to develop the system.

He said the patent office might simply accept the Oracle proposal without soliciting bids from others, but doing so would require it to show that the Oracle approach is "unique." In any case, he said he may encounter opposition from federal procurement officials, who balk at the concept of buying a commercial, off-the-shelf product that is not yet even on the shelf. Consequently, he is seeking support for the idea from senior officials at the U.S. Department of Commerce and the White House Office of Management and Budget.

"There's absolutely nothing improper about this, but I'm afraid its newness may cause problems," he said.

A Commerce Department official said while he is enthusiastic about the project's concept, he stops short of endorsing it because he has not seen details.

None of the vendors involved would say much about what approach they might take in meeting the patent office's needs.

However, Lori Mirek, director of server product marketing at Oracle, pointed out that the company just announced its Parallel Query Option, by which an Oracle database can run on shared-memory multiprocessor workstations, minicomputer clusters and massively parallel computers such as those from NCube.

Carlton Samuels, support operations manager at Software AG, questioned the need for a massively parallel system with hundreds or thousands of processors. He said the company's Adabas database management system running on IBM mainframes handles 100 million transactions a day for an airline and supports a text database for the Federal Bureau of Investigation that is "in the hundreds of gigabytes."

Patent office

CONTINUED FROM PAGE 1

tion flowing to users.

The patent office's text search system would allow it to evaluate alternate means of delivering information to patent examiners, who by law must exhaustively review the literature before passing on the patentability of an invention.

"The existing system is rigidly Boolean — standard NEXIS/Lexis sort of stuff," said Rob Porter, director for systems development and maintenance. "That puts us in a position of absolutely flooding the search examiner with all kinds of information of marginal relevance."

The patent office database, which now holds records of all patents issued since 1971, could grow in a few years to 6T bytes, depending on how much information is made available for high-speed searching.

"In five to 10 years, we'll have two to four times more information to show examiners [in each search]," said Thomas Giammo, assistant commissioner for information systems at the patent office. "If we don't find ways of filtering information and sorting it so the most likely hits get there first, our success in bringing examiners more information will be their downfall."

No available commercial products meet the patent office's filtering needs, according to Giammo, though some are "within striking distance."

Possible users outside the patent office include the Central Intelligence Agency, which has approached the office for information about the project; agencies with large text re-

Information explosion

The patent office's existing text search system runs on an Amdahl Corp. 5990 mainframe and can support 120 concurrent users. The company foresees the need to support 750 concurrent users by 1995 as the patent office expands access from 14 to 74 public libraries. But that requirement could skyrocket if public access were provided via the Internet, as the Securities and Exchange Commission recently decided to do with its corporate filings.

Mutual benefits

Giammo said he is looking for a vendor with established technology whose implementation the patent office would partially fund in exchange for a long-term license. He said the vendor would have to prove the system would be scalable — as the office cannot predict its user demand — and that the resulting product would be "commercially viable."

The winning vendor would be responsible for marketing the system and could use the patent office as a beta site and reference account, he said.

Giammo declined to reveal either the



KATHRINE LAMBERT
Patent office's Thomas Giammo might accept Oracle's proposal without soliciting bids from others

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Internetworking

Cisco routers to assist Windows NT

By Joanie M. Wexler

In its efforts to groom its Windows NT Advanced Server as an enterprise-wide desktop server, Microsoft last week said it will deliver internetworking functions to the operating environment via the first PC-based router developed by Cisco Systems, Inc.

The two companies said they have teamed on a desktop-to-enterprise communications effort in which low-end routers from Cisco for PCs will link branch offices into corporate internetworks. The routers are due in the first half of next year. The move represents Microsoft's answer to Novell, Inc.'s home-developed MultiProtocol Router, a NetWare Loadable Module that runs on NetWare servers, for providing low-cost connectivity needs.

From one user's perspective, "one of our primary considerations is the availability of low-cost Internet connectivity options," said Bill Bard, director of the office of telecommunications at the University of Texas in Austin. This is because the university provides networking services to many schools and state agencies; because of its large site count, the university requires inexpensive connections, he said.

Cross training

Aside from the technology ramifications, "product will be delivered through one channel, and both companies are investing in cross training," said Don Listwin, Cisco's vice president of marketing. He added that the two firms are looking to integrate their network management systems.

Integrating CiscoWorks, which manages Cisco routers, and Hermes, Microsoft's code-named desktop manager due in the first half of 1994, could appeal to branch offices that might want a view of their local domains only, Listwin said.

Both CiscoWorks and Hermes are also slated to tie in to the high-level, Unix-based enterprise management systems where they will become part of a larger management picture for networking staff responsible for both the network backbone and periphery, he said.

No resting on laurels for Novell

Novell does not intend to just sit on its hands while Microsoft makes the multiyear trek to Cairo, according to Bob Young, Novell's vice president of marketing. "When Cairo ships, we'll again be two to three years ahead of them, as we are now," he said.

For the past few years, Novell has been busily working on the components of an object-oriented network services framework that will deliver everything that Microsoft promises and more, Young claimed.

One such piece is NetWare Directory Services, which is 90% to 95% object-based now, Young said.

Another important piece is an Object Request Broker, to be delivered next year, which will automatically match application and user requests to the right service, without the user's having to worry about where it is located, Young said.

The broker, which Novell is developing with its partner Hyperdesk Corp., will be fully compliant with the OMG's Corba, he added. Novell said it intends to keep adding service objects that the broker can access,

again cleaving to OMG object definitions, Young said. So far, Microsoft has held aloof from OMG, claiming that the standards group's broker and object definitions are too rudimentary.

More NetWare services

While Microsoft may offer a rich set of desktop objects to be accessed through its object manager, Windows NT offers a minuscule range of network services compared with NetWare, Young said. "I would argue that until Microsoft delivers a complete network operating system," Cairo's object manager will have little value.

Rather than attack Novell's 70% share of the market directly, Microsoft will attempt to get a foot in the door of NetWare installations by offering its NT and Windows clients access to the dominant network operating system, said Claude King, senior systems analyst at the University of Florida.

However, Cairo will not be able to just walk into Novell installations with Cairo, King said.

—Elisabeth Horwitt

Microsoft casts object net

CONTINUED FROM PAGE 1

updated or relocated, King said. "That's what I call an executive information system."

Cairo will also extend the dynamic application links provided by Microsoft's Object Linking and Embedding (OLE) 2.0 across the enterprise, said Greg Lundell, group product manager for Windows NT at Microsoft. This will move users from an "application-centric view where you click on a spreadsheet, start it up and then open a file" to an object-oriented framework where "the user can focus on the information and not have to understand whether it's a spreadsheet or general ledger."

User, software vendor and analyst sources briefed by Microsoft said they like what they have heard of Cairo's enterprise-wide resource-access abilities so far, although it is early yet to tell whether the architecture will be all it is cracked up to be.

Bang must be bigger

ShowTime Network, Inc., for example, is not likely to replace its current NetWare services with Cairo unless Microsoft's platform turns out to offer a whole lot more functionality, said Peter Pollack, director of technology at the Viacom, Inc. subsidiary. ShowTime currently uses Unix, and some NT, for application servers.

On the other hand, Cairo is a likely choice for companies such as Nordstrom, Inc., which is in the process of rolling out its enterprise network environment on Windows NT Advanced Servers, according to Larry Shaw, PC coordinator at the Seattle-based de-

tem, grab an image of the user and throw it in the trash or move it," as opposed to deleting or moving all user entries manually, according to Lundell.

Microsoft's "Cairo commandos," which will invade user and independent software vendor (ISV) turf, will be the company's own popular applications, which Microsoft is quietly fitting with

Cairo-compatible objects, said John Donovan, a director at WorkGroup Technologies, Inc., a research firm in Hampton, N.H.

Microsoft's ever-popular Windows environment will be another Cairo commando, particularly in its next-generation, or Chicago, iteration, Griffin said. Chicago and NT will have "much the same user interface and APIs," and Chicago will have OLE 2.0 support, he added.

ISVs with migration jitters should be soothed by the fact that applications that support Win32 and OLE 2.0 are "80% of the way" to the new platform, according to Lundell.

Microsoft has been pushing hard to gain OLE 2.0 commitments from virtually all major software vendors, Griffin said.

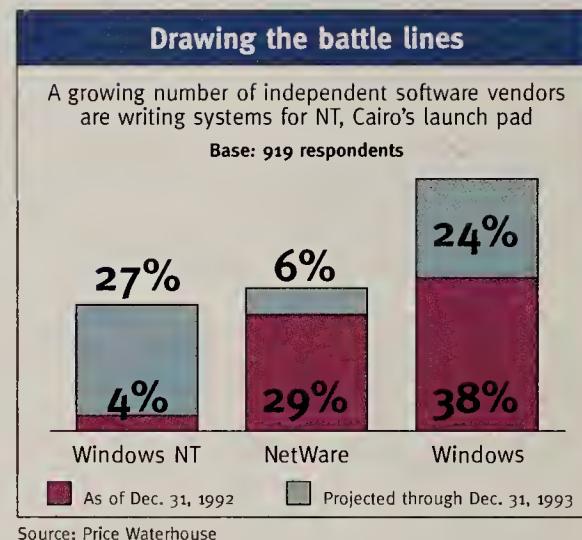
Microsoft's "Cairo commandos" will be Microsoft applications fitted with Cairo-compatible objects.

Microsoft's openness stance remains less than sincere, however, as long as the company goes on insisting that its own object definitions, and not those of an industry standards body such as the Object Management Group (OMG), be used, said George Reid, director of information systems at Sanford C. Bernstein & Co., a New York financial services firm.

If Microsoft "stonewalls" on the OMG's Common Object Request Broker Architecture (Corba), it will isolate its users from the distributed networking standard, which is blessed by most of the big Unix systems players as well as by Novell, Reid added.

Standards bodies such as the OMG have yet to deliver a "practical implementation" of a standard that will "satisfy users" [distributed] needs in heterogeneous environments," Lundell said.

For example, Corba has yet to provide security features or network transport-independence, he said. In contrast, "We have object definition handling in OLE today," he added. "Realistically, if you have 40 million desktops using OLE and the Microsoft object model, the momentum will be fairly compelling."



partment store chain.

Among the reasons for Nordstrom's choice: "NT's manageability and scalability and the fact it runs as a full 32-bit protected mode," Shaw said. An application running in unprotected mode in NetWare can bring down the whole server if it accesses the wrong area of memory, he added.

To extend Cairo support beyond its own desktop systems, Microsoft plans to base the platform's connectivity plumbing on the Open Software Foundation's Distributed Computing Environment remote procedure calls. Microsoft is working with vendor partners on a "very pragmatic solution that follows some emerging standards" and will make some preliminary introductions in the next couple of months, Lundell said.

Various ports planned

Microsoft will also make Cairo-based services available to other vendors' platforms by porting OLE, which Cairo is based on, to non-Microsoft desktop systems such as the Macintosh, Griffin said. Microsoft will port OLE to other systems as well, based on user demand, Lundell said.

Windows icons will shield users from the dirty work involved in finding a particular application or record on a system, as well as housekeeping chores such as moving or deleting a user on systems and files across the enterprise.

"You should be able to go to a graphical presentation of the sys-

E-mail conference highlights IS challenges

By Lynda Radosevich

If information systems managers think that life is complicated now, wait until speakers at the E-Mail World conference this week in Santa Clara, Calif., outline how imminent national and international data "superhighways" will lead to a vastly more complex world.

"It will be as disruptive as going from mainframes to LANs," said David Farber, a conference speaker and a board member of the Electronic Frontier Foundation, a Washington-based group that lobbies on computer-related issues.

That is because the merger of communications and computing, which has been simmering for 20 years, will swing into high gear once these data superhighways take off, requiring IS managers to rethink the way they build computing systems.

By comparison, the move from mainframes to LANs was a switch from one computing platform to another, said Farber, who is also a member of the computer science faculty at the University of Pennsylvania.

Among the challenges facing IS are rethinking the meaning of security and building new software systems that can shoot message-based information around the world in real time with 100% reliability.

Current solutions

While superhighway commercial availability is still four to five years away, vendors at the conference plan to roll out products to tackle more immediate problems, such as interoperability and enterprise-wide directory synchronization. This week's announcements will include the following:

- **Banyan Systems, Inc.** in Westboro, Mass., will announce an Intelligent Messaging interface for Unix that allows organizations with mixed Unix and PC networks to communicate via integrated messaging systems. It is available now as an option for Banyan's Vines for Unix server software for Vines for The Santa Cruz Operation's Unix; the same option will be available for Hewlett-Packard Co.'s HP/UX, IBM's AIX and Sun Microsystems, Inc.'s Solaris in the first half of 1994.

Host dominates

In a recent survey of 100 large organizations, 70% of the active mailboxes were on host systems vs. 21% on PC/Macintosh and 7% on Unix platforms, according to Ferris Networks, Inc. in San Francisco.

Unix server software for Vines for The Santa Cruz Operation's Unix; the same option will be available for Hewlett-Packard Co.'s HP/UX, IBM's AIX and Sun Microsystems, Inc.'s Solaris in the first half of 1994.

- **Novell, Inc.** in Provo, Utah, will add Message Handling Service (MHS) criteria to its YES testing and certification

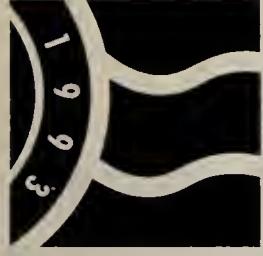
program. Vendors' messaging products that meet the criteria will be ensured to interoperate with one another, according to John Rizzi, president of the MHS Alliance. The specification is expected by the first quarter of 1994. Also, the alliance will release the first draft of a calendaring/group scheduling specification announced in June. Additionally, Novell

is expected to unveil new MHS gateways for Lotus Development Corp.'s CC:Mail and Microsoft Corp.'s Mail.

- **RadioMail Corp.** in San Mateo, Calif., will announce a new service that allows users of Apple Computer, Inc.'s Newton personal digital assistant to receive messages from any electronic-mail system through a central RadioMail gateway.

The Newton must have Motorola, Inc.'s Newton Messaging Card, a wireless PCMCIA adapter.

- **Alisa Systems, Inc.** in Pasadena, Calif., will announce an enterprise E-mail directory called OpenDirectory. Based on a Sybase, Inc. SQL database, the directory allows users of Microsoft's Open Database Connectivity client software to browse through it. The directory works with Alisa's message routing and directory synchronization software.



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News Shorts

Microsoft delivers DOS 6.2

Microsoft Corp. formally announced delivery of MS-DOS 6.2 last week, pricing the Step Up version of the upgrade for DOS 6.0 users at only \$9.95. For all other DOS users, the upgrade is priced at \$77.95, although the company expects the street price to be around \$50. Besides the expected improvements made to the program's DoubleSpace compression program and SmartDrive caching feature, Version 6.2 also sports CD-ROM caching for faster performance. The program should be available this week.

WordPerfect teams with MCI for E-mail

WordPerfect Corp. and MCI Communications Corp. announced last week that WordPerfect Office 4.0 will be incorporated into the MCI Mail network. The move will allow Office users to exchange messages with MCI Mail users and users of 54 public electronic-mail services in 40 countries connected with MCI, according to WordPerfect. The service will be available in the second quarter of 1994. MCI has a similar arrangement with Lotus Development Corp.'s CC:Mail.

Digital readying first ATM products

Digital Equipment Corp. said last week it will start shipping Asynchronous Transfer Mode (ATM) networking products in the first quarter of 1994. The initial rollout will include a backbone ATM switch with a throughput capacity of 10G byte/sec.; a 155M byte/sec. ATM adapter for DEC 3000 workstations; and a module for its Gigaswitch FDDI-to-FDDI matrix switch that will let it act as a gateway between Fiber Distributed Data Interface (FDDI) and ATM networks. Pricing has not been finalized, the company said.

IBM cuts PC prices

The IBM PC Co., preparing for significant product announcements in its PS/2 line, cut prices up to 20% on its PS/2 Model 90 and PS/2 E, and by more than 50% on its 486SLC2 processor upgrade for its Models 56 and 57. The base price for the Model 90 with a 25/50-MHz DX2, 8M bytes of RAM and a 540M-byte hard drive went from \$4,765 to \$4,135.

SHORT TAKES Lotus Development Corp. last week moved to make it easier to master Notes. The company will offer 10 computer-based training modules with CBT Systems in San Francisco.... Kendall Square Research Corp. last week said it expects to report a loss for its third financial quarter, where analysts had expected a gain. Word of the expected loss comes on the eve of this week's expected announcement of the KSR-2, a high-end massively parallel machine that doubles the power of its current model.... Unisys Corp. has completed its purchase of Computervision Corp.'s System 9 Geographic Information System technology; the purchase price and terms were not disclosed.... WordPerfect has formed a small-to-medium-size-business group that will focus on customers with 50 to 299 PCs.... Toshiba America Information Systems, Inc. will today begin offering a three-year warranty for parts and labor on its flagship T4600 notebooks, the T6600 portable, the Dynapad T100X pen-based system and all Desk Station docking stations. Current users of those products can buy the three-year warranty for \$149.95 for color products, \$99.95 for the rest.... Iomega Corp. announced that Fred Wenninger, president and chief executive officer, has decided to leave the storage company. Senior Vice President Leon Staciokas will be interim CEO until a permanent replacement is found.... As expected, chip maker National Semiconductor Corp. last week unveiled phase one of a network adapter card rollout in partnership with Novell, Inc.

Compaq boxes focus on ease of use

Desktops add sound, packaging upgrades

By Stephen P. Klett Jr.

BOSTON

Compaq Computer Corp. is set to unleash today a desktop blitzkrieg of 46 machines emphasizing ease-of-use features from the graphical user interface (GUI) to the packaging.

The new machines mark Compaq's attempt to blanket every segment of the market from major corporations to small business users to first-time home buyers, company officials said.

"This is the most significant product launch for the company since the breakout of the reborn Compaq in June of '92," said Richard Zwetchkenbaum, senior PC analyst at International Data Corp. in Framingham, Mass.

All of the machines will ship with TabWorks, a Windows shell developed by Xerox Corp.'s XSoft division that is said to make the system more intuitive [CW, Oct. 25].

On the desktop

Spearheading the desktop assault is the DeskPro XE series, a line of high-performance XT/AT bus, Pentium-based PCs. Pricing for the DeskPro XE, which features voice annotation and response capabilities, will start at \$2,800.

In addition, the XE line incorporates the TriFlex/PC architecture of the high-end DeskPro/M series to boost I/O performance. The XE series will replace Compaq's DeskPro/I line, which gradually will be

phased out of production by the end of the year, according to the Houston company.

Welcome upgrade

"The DeskPro/I was very long in the tooth and needed upgrading," said Randal Giusto, an analyst at WorkGroup Technologies, Inc., a consultancy in Hampton, N.H.

Blount Construction in Montgomery, Ala., will take a close look at the Pentium versions of the XE,

expandability. Both lines offer a range of processor choices that span Intel Corp.'s i486SX and DX2 offerings.

Compaq will also introduce a ProLinea model that borrows Presario's "all-in-one" packaging. Called the ProLinea Net 1/25S, it features an integrated monitor and either an Ethernet or a Token Ring network adapter card built onto the system board.

While users said they were im-

A clean desktop

Refreshed Compaq product line spans the gamut. A sampling:

MODEL	FEATURES	PRICE
DESKPRO XE	Enhanced QVision graphics, business audio capabilities	\$3,199 for 60-MHz Pentium model*
PROLINEA NET 1/25S	Integrated monitor and network card	\$1,349 for Ethernet model with 486SX/25 CPU
PROLINEA MT	Minitower, five Industry Standard Architecture drive bays and expansion slots, Pentium-upgradable	\$1,449 for model with 486SX/33 CPU; \$1,899 for multimedia version*

ALL MODELS ARE ENERGY STAR-COMPLIANT

*PRICE EXCLUDES MONITOR

according to Scott Lee, PC support manager at the company. "Right now our 486 machines are meeting our needs, but we may need a performance boost in the next six months... and the XE's \$2,800 entry price for Pentium sounds pretty good," Lee said.

In addition to the XE, Compaq will also unveil new and updated versions of its ProLinea and consumer Presario lines. Both lines are now available in five-slot, five-bay minitower configurations. Previously, the ProLinea offered up to three slots and drive bays for

pressed with the scope of Compaq's offerings, some were skeptical of the firm's ability to deliver the products, particularly the Pentium XEs.

Compaq said it is ramping up production to 100% of capacity in the fourth quarter and will have no trouble meeting demand. "The Pentium is in good supply," said Bob Bauer, director of North American desktop marketing at Compaq. "We have a backlog situation on 66-MHz chips but have a more than ample supply of the 60-MHz chips."

IBM gives OK

CONTINUED FROM PAGE 1

cessful Windows NT will be on the desktop, they said they realize NT's importance to the overall success of the chip [CW, Aug. 16].

"There is no exclusivity here; the PowerPC supports a number of 32-bit operating systems. But if people think we'll be quick to go to NT, they don't understand how strategic AIX and WorkPlace OS are to us," an IBM spokesperson said.

While Personal Software Products recently scored several volume deals with large corporate accounts for OS/2 2.1 on the Intel platform, some analysts said that that is not enough to per-

suade IBM's hardware units to completely rule out Windows NT from playing a strategic role on the PowerPC, given Windows NT sales projections for the next year.

"It looks like demand is going to be elsewhere, and IBM is sensibly allocating its resources [toward NT]," said Dean McCarron, an analyst at Miero Design Resources in Scottsdale, Ariz.

Meeting goals

As of late last month, Microsoft said it had shipped 200,000 copies of Windows NT. Company officials said they believe this puts them on target to meet their goal of 1 million NT sales by next August.

"I would not say we are ready to jump up and down about being way ahead of plan, but we are exactly where we thought we would

be [for shipments]," a Microsoft spokeswoman said. "And we are pleased with where they are going."

The majority of those 200,000 copies have gone to corporate accounts that use the system to develop mission-critical and client/server applications, she said. This is exactly the market toward which WorkPlace OS for the PowerPC and Intel platforms is headed.

IBM had initially planned to deliver WorkPlace OS for the Intel platform, followed by a version for the PowerPC. But fearing that Windows NT would gain rapid acceptance on the PowerPC platform, Personal Software Products this summer flipped its priorities to deliver the operating system for the PowerPC first, sources said.

"That decision was driven by what [IBM] sees as sizable demand for something more advanced to run on the PowerPC," one developer said.

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DEC pushes OSF/1 as NT simmers

By Craig Stedman
MAYNARD, MASS.

Forecasting a two-year ramp-up for Microsoft Corp.'s Windows NT, Digital Equipment Corp. is relying on short-term growth of its DEC OSF/1 operating system despite the company's current ranking as a Unix also-ran.

NT might be more critical for driving Alpha AXP shipments in the long run because of its desktop potential. But even Dennis Schneider, director of NT marketing at Digital, agreed that this "is clearly the year to make OSF/1 a significant player in the Unix market."

Observers said competitive pressure, particularly from Hewlett-Packard Co.,

is also helping to cement Digital's need for an increased Unix presence. However, users interviewed recently expressed reticence about casting their lot with DEC OSF/1, saying it remains too shapeless to latch on to right now.

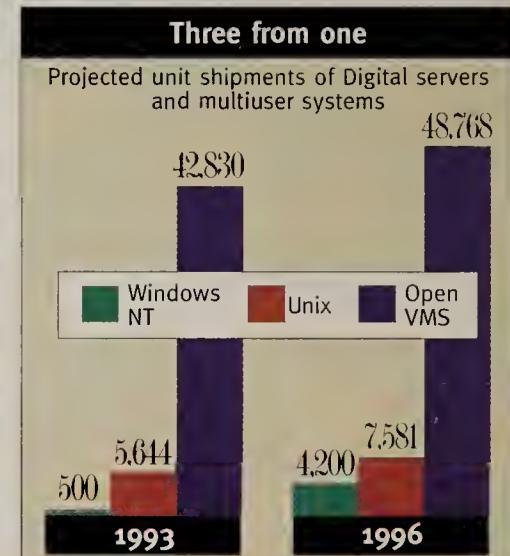
"It's more an operating system of the future," said Matt Holdrege, senior network specialist at PacificCare Health Sys-

tems, Inc. in Cypress, Calif.

"The salespeople talk about OSF/1, but they're hampered by the lack of real packaged solutions," added Tim Bird, director of information services at Paws, Inc. in Muncie, Ind. "They can only sell OSF/1 right now to people who really know what they're doing."

Rick Webster, a senior systems analyst at Caterpillar, Inc. in Peoria, Ill., said he "would like to see OSF/1 fly." However, he added that Caterpillar uses both HP's and IBM's Unix systems and has no definite DEC OSF/1 purchase plans.

Digital acknowledges that its Unix track record makes users nervous. As a result, the debut of DEC OSF/1 2.0 got top billing Oct. 12 when the company unveiled a wide range of products.



Source: International Data Corp., Framingham, Mass.

"They've been talking about OpenVMS and NT, too, but what they've pushed us aggressively on is OSF/1," noted Dennis Vohs, chairman of software vendor Ross Systems, Inc. in Redwood City, Calif. "I think they realized that HP was eating their lunch," he explained.

Ross has been one of the leading suppliers of applications for Digital's VAX/VMS computers. However, Vohs said "almost all" of its major sales in the last six months "have the words 'HP 9000' in front of them," a reference to HP's commercial Unix systems line.

When it comes to Unix, Digital essentially has nowhere to go but up. Edward Lucenti, vice president of worldwide sales and marketing, conceded that even with Alpha, the company is "just barely holding [its] own" in the workstation market after losing significant ground in the last few years.

Digital did not rank among the Top 10 vendors of commercial Unix systems priced from \$10,000 to \$1 million in 1992, according to International Data Corp. (IDC). The company came in 12th worldwide on IDC's list, with just a 2.6% share of a \$7.26 billion market, which amounted to less than \$200 million in sales.

DEC OSF/1 sales have been slowed since its March introduction by a small applications count and the lack of multiprocessing and layered software oriented to commercial environments. Digital hopes DEC OSF/1 2.0 will attract more interest when it ships in January with new layered software and support for running recompiled Unix System V Release 4 applications.

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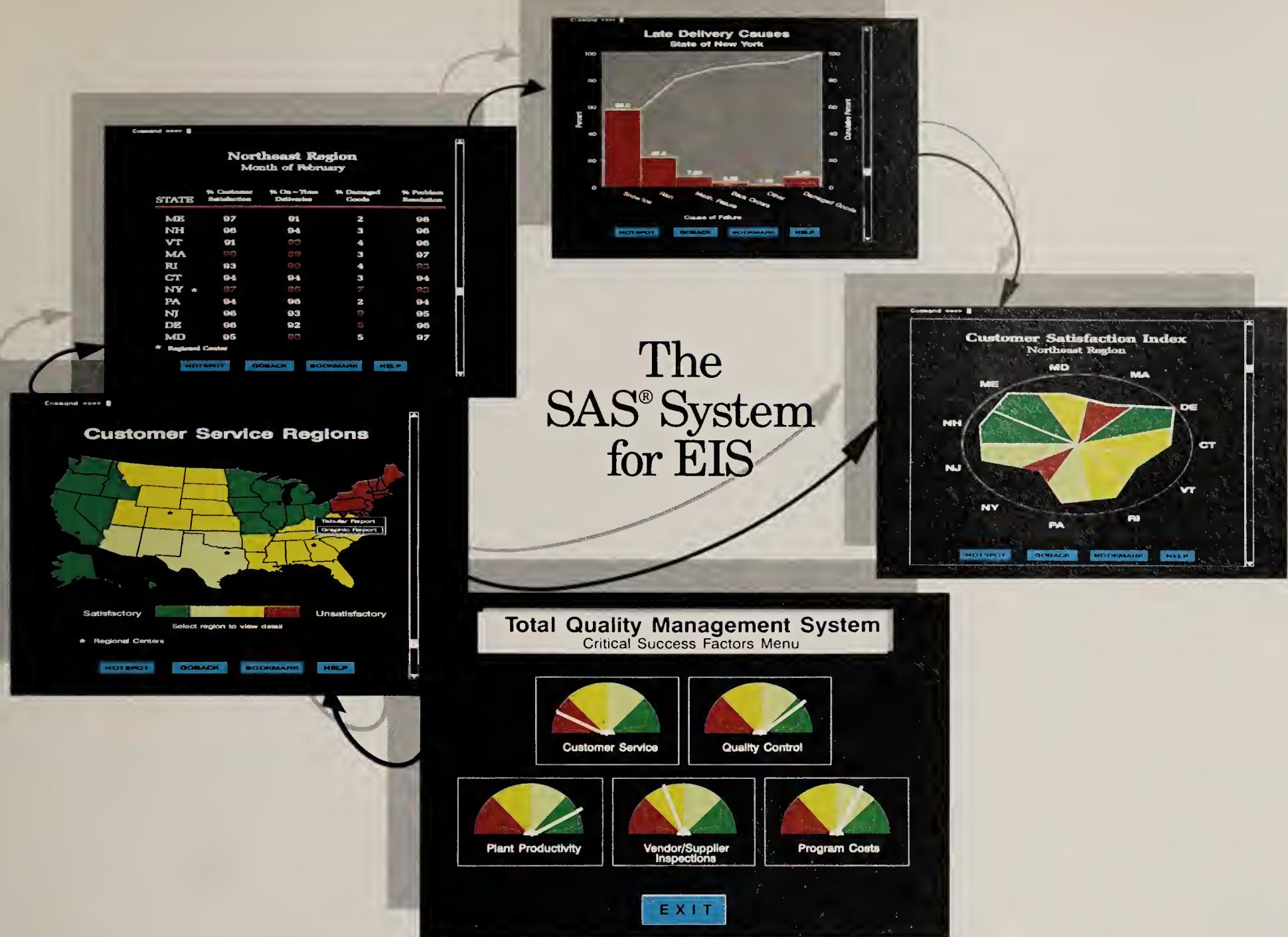
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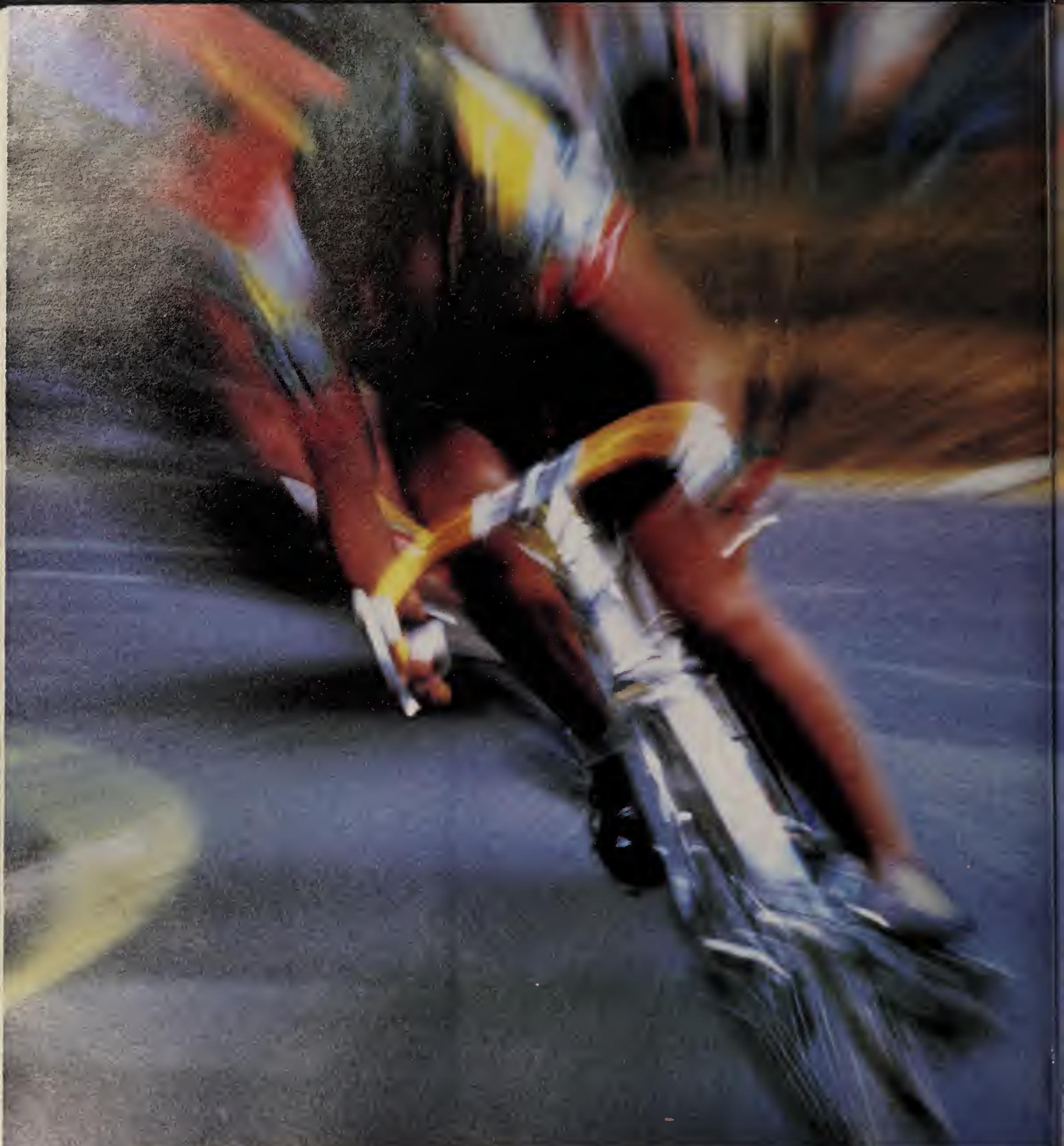
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Remote workers get pay-per-view LAN access

By Joanie M. Wexler

Another data communications option for workers at large emerged last week when Infonet Services Corp. initiated a pay-as-you-go dial LAN service.

The El Segundo, Calif.-based worldwide network services provider added a usage-sensitive cousin to its existing

InfoLAN service, which provides TCP/IP LAN internetworking services for large-volume applications at a fixed price.

This latest offering, Switched Access Services, is targeted at telecommuters, business travelers and other low-volume users looking to leverage their companies' existing TCP/IP LAN infrastructures with a minimal investment, said

Larry Morgan, Infonet's vice president of product marketing [CW, Oct. 11].

His firm's offering comes amid a rash of remote-access product rollouts that also accommodate staffers wishing to dial into LAN internetworks. The key differentiator between these alternatives — from the likes of Shiva Corp., IBM and Centrum Communications, Inc. — is that

Infonet provides end-to-end management and security, the carrier said.

Infonet found "customers do not want the Excedrin headaches associated with provisioning, maintaining and securing their own dial networks," said Doug Laurin, Infonet product manager.

Infonet said the service is available in more than 20 countries via a local or 800 number call and that eight global production customers are now on the network. Software maker Sybase, Inc. has signed on with the goal of "making access to the Sybase global network only as far away as the closest wall jack," said Don Proctor, a Sybase senior technical staffer.

LAN-to-go

The demand for public dial-in LAN services will be fueled by at-home workers, travelers and occasionally communicating business partners



U.S. LAN dial service revenue forecast

Source: The Yankee Group, Boston

Customer Sun Microsystems, Inc. said it wants to give selected third parties access to some Sun data while isolating them from other access privileges.

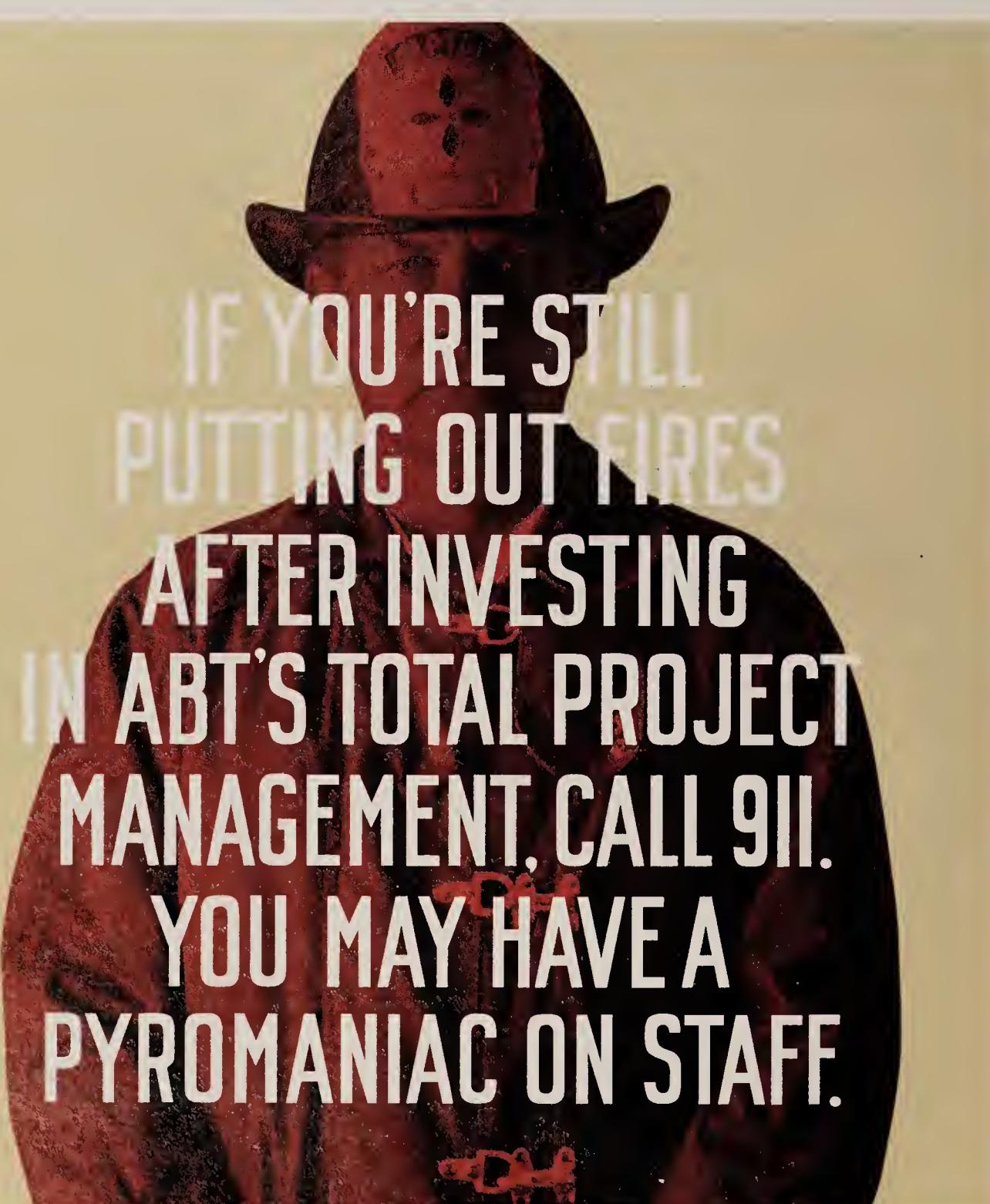
Infonet is providing multilayered security to set up this scenario for Sun and other customers. Its security scheme includes user access codes, passwords and network segmentation.

Public alternatives to the Infonet dial-up offering today largely include gateway services in and out of users' IP networks to carriers' X.25 or frame-relay networks, said Caroline Michel, a senior analyst at International Data Corp. (IDC) in Framingham, Mass.

More than 75% of corporate America today has "hundreds to thousands of employees traveling at least one day a week," said Mark Winther, vice president of telecommunications at New York researcher Link Resources, an IDC company. "Dial IP services are a key way to keep them in touch."

Infonet service pricing ranges from 28 cents to \$1.88 per minute, Laurin said. Users must run computer software containing the Point-to-Point Protocol for industry-standard IP wide-area network connections; Infonet will install a dial-up router at each participating site, make the appropriate hookups and manage the end-to-end link.

Initial access speeds are 9.6K and 14.4K bit/sec. Users acknowledged that comparatively skinny WAN bandwidth persists as a general drawback for users accustomed to much faster LAN speeds, but to a remote user, lower network response times "beats driving an hour into the office to get an application to run faster locally," said David C. Berg, Sun vice president of information resources.

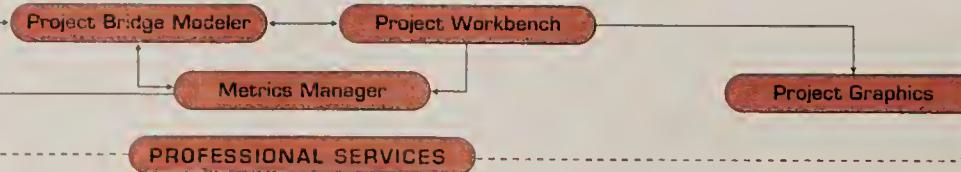


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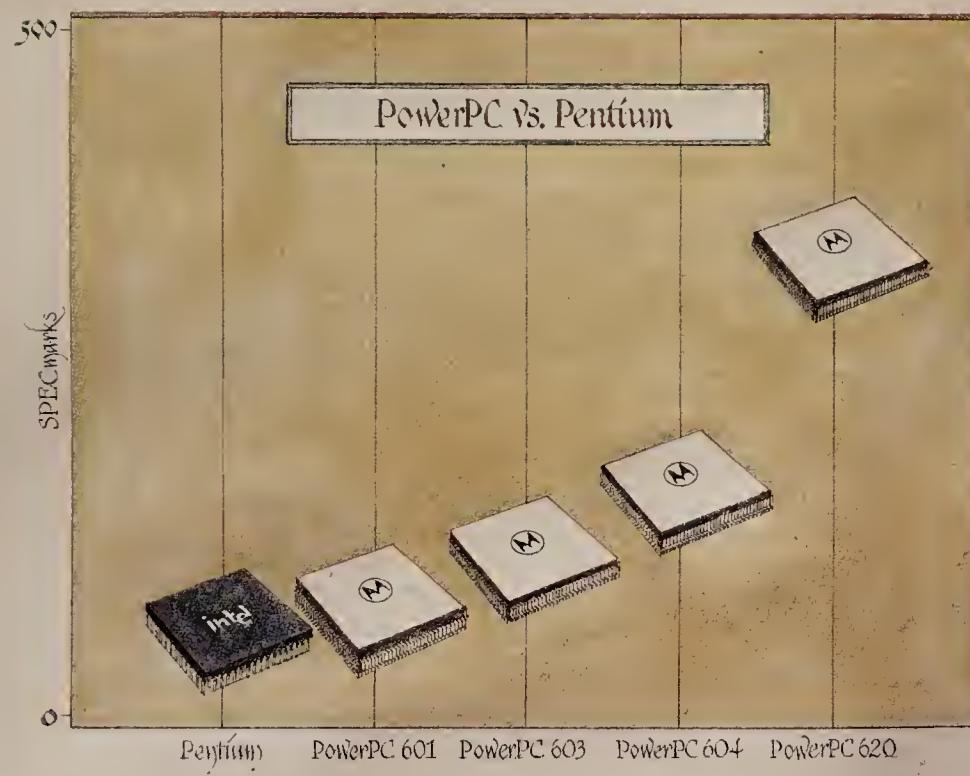
If you've heard the Pentium™ microprocessor was powerful, it's time you see the PowerPC™ Microprocessors from Motorola. To be perfectly candid, Pentium is fairly powerful, but it's not nearly as powerful as the PowerPC family of microprocessors.

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PeopleSoft adds work-flow support

By Kim S. Nash and Craig Stedman
BURLINGAME, CALIF.

PeopleSoft, Inc. last week promised to add work-flow support to its client/server accounting packages, playing catch-up to Dun and Bradstreet Software, which has touted built-in work-flow functions as a differentiator in the financial software market.

PeopleTools 3.0, released last week, is an application development tool kit that sports rudimentary work-flow features, such as one-way electronic mail and image support. The tool kit lets users modify and add work-flow capabili-

ties processing, according to Tom Kucharvy, president of Summit Strategies, Inc., a client/server consultancy in Boston.

For example, at drug and health care firms such as Merck & Co. and Eli Lilly, work-flow technology is "a de facto requirement," Kucharvy said.

The Federal Drug Administration's complex laws mean pharmaceutical workers must document every step in filing for patents, distribution rights and the like. Workgroup systems offer productivity enhancements and an electronic trail that make the technology "ideal for finance, inventory and other intricate processes," he said.

In tandem

Originally scheduled for an early 1993 release, Dun & Bradstreet Software's client/server financial applications are now in line with PeopleSoft's release timetable

APPLICATION	DELIVERY	PRICE
DUN & BRADSTREET SOFTWARE'S FINANCIAL STREAM		
SmartStream decision support	July 1993	Starts at \$100,000
Accounts payable General ledger Fixed assets	Oct. 1993	Starts at \$225,000
Accounts receivable	Dec. 1993	
PEOPLESOFT'S PEOPLESOFT FINANCIALS		
Accounts payable Accounts receivable General ledger	Sept. 1993	Average license fee for each module: \$300,000
Asset management	Dec. 1993	

ties to PeopleSoft Financials and other applications.

PeopleSoft is also talking with Lotus Development Corp., Reach Software Corp. and other vendors about building links to their groupware systems, but no deals have been signed.

"Work flow will be critical" in line-of-business applications, such as accounting and or-

ber delivery [CW, July 26].

None of the new sites is in production yet with D&B Software's Financial Stream, a spokesman said.

While D&B Software's delay may deter potential customers, existing mainframe D&B Software sites will probably hang on. Baxter International, Inc. has tested D&B Software's

these new tools offer a fairly sophisticated knowledge base to automatically generate code, Kastner said.

Unlike the existing generation, the new tools were designed to be multiplatform. Developers can create one specification and then choose the target platform on which the application will run. The knowledge base then generates the required code for the specific platform, graphical user interface or SQL database, said Judith Hurwitz, president of Hurwitz Consulting, a consulting firm in Watertown, Mass.

Here and now

Both rules-based tools develop applications that can be triggered by events or respond to external occurrences.

For example, a stockbroker might need an application to change when prices for a particular commodity reach a certain point.

Earlier attempts to target this market by Cooperative Solutions, Inc. were unsuccessful because of a premature entrance and a lack of multiplatform support, according to industry analysts. But these new companies may be hitting the market at the right time, providing a combination of capabilities that corporate developers are beginning to demand, according to some analysts and users familiar with the tools.

Dynasty began shipping its tools — also called Dynasty — earlier this year but will not officially unveil them until next month.

Forte last week announced that its tools, also called

Product rollouts

Twenty-five customers have licensed PeopleSoft Financials, while D&B's Financial Stream is installed at a dozen sites.

D&B plans to add support for Sun Solaris this month. It currently supports HP/UX, DG-UX and IBM's OS/2.

SmartStream decision-support product for almost two years but has yet to put it into production. Other projects are more pressing, according to Bill Reiher, vice president of central systems.

"But being a long-term D&B user, it's just a matter of time for us to adopt it," Reiher said.

Evaluators in our Firing Line section liked PeopleSoft Financials' functionality but found the client/server technology difficult to install. See story page 118.

Portable People

PeopleSoft, which already supports databases from Sybase, Inc. and Oracle Corp., plans to add Informix Software, Inc. to the list "within the next several weeks," said Paul Salsgiver, vice president of partnership programs at PeopleSoft.

However, support for The ASK Group, Inc.'s Ingres database "isn't as far along," acknowledged chief executive officer Dave Duffield. Although it is targeted for next year, an Ingres port is not as pressing, he said. "Ingres isn't growing too quickly, but there's an enormous installed base."

Ingres users looking to jump to other databases might do well to buy PeopleSoft applications, he suggested, because they are portable to other systems. In contrast, D&B's Financial Stream line runs on only Sybase's SQL Server.

IBM's DB2/2 and DB/6000 and Microsoft Corp.'s SQL Server for NT are also on PeopleSoft's 1994 to-do list, Salsgiver said.

—Kim S. Nash

Client/server

Start-ups bring heavyweight tools

By Melinda-Carol Ballou

A new breed of object-oriented client/server tools is on the way that reportedly will speed the development process by improving performance and generating cross-platform code.

Built by Dynasty Technologies, Inc. in Naperville, Ill., and Forte Software, Inc. in Oakland, Calif., these tools are said to let developers slice up their applications to run on the most appropriate clients and/or servers.

"These new tools use object technology without the complexity of object-oriented programming languages to let developers create graphical clients with multiple back ends," said Peter Kastner, a vice president at Aberdeen Group, a consulting firm in Boston. "And business objects will allow businesses to create units, such as a purchasing function, and then snap together applications from templates."

While the "first generation" of client/server tools, such as Powersoft Corp.'s PowerBuilder, required developers to create third-generation language scripts,

Forte, are in beta but will not ship generally until next summer. Forte will also offer management tools that will reportedly administer and monitor the performance of the partitioned applications.

The partitioning is significant because it allows developers to target the location for the performance of specific tasks. With other tools, "fat clients" can suck up bandwidth, which can create performance problems that these tools mitigate, Kastner said.

Early users of Dynasty's product — an aerospace firm, a claims processing company and a telecommunications firm — generally said the object-oriented structure and partitioning available with the tools are able to handle transaction-intensive, complex application development to distribute client/server applications.

For example, Sikorsky Aircraft Co., an aerospace firm in Stratford, Conn., is using the Dynasty tools to create an application that will manage mission-critical data such as purchasing and shipment information from customers and suppliers.

The company was worried about sealing applications, the performance of other vendors' client/server products and management and maintenance issues.

The pricing for Dynasty is \$8,000 per development workstation seat and \$50 to \$150 per runtime license, depending on platform.

Both Forte and Dynasty support Macintosh, Windows, OS/2 and multiple Unix platforms. Forte pricing will be announced when the product ships.



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Editorial

Damage control

Don't look now, but that sound you hear may be from the cracks appearing in the Microsoft operating system edifice.

Despite last week's vague statements that Windows NT shipments are "exceeding expectations" — exactly what those expectations were wasn't revealed — it's clear that Microsoft is still struggling to temper optimism over NT's market performance. The optimism is almost wholly of Microsoft's own making.

When Microsoft officials first began talking about NT 2½ years ago, they confidently positioned it as the heir apparent to Windows. But a few things changed between those early heady pronouncements and NT's actual shipment three months ago. For one, Microsoft found that it couldn't fit the mother of all operating systems into less than 16M bytes of memory, a configuration used by about 2% of PCs sold today. For another, IBM got its act together with a really functional and efficient version of OS/2. Finally, Microsoft created a separate migration path for Windows users, a sort of "NT Lite" it calls Chicago.

So now the company is in damage-control mode. Microsoft has spent the last year recasting NT in a decidedly less ambitious role as a Unix competitor and telling everyone who will listen that no more than a million copies will ship in its first year (compared with about 8 million to 10 million for Windows 3.0). Rich Tong, Microsoft's general manager for enterprise marketing and products, told me last week that NT will someday overtake Windows shipments, but he said it'll be at least a couple of years before PC price/performance makes NT's voracious memory appetite a nonissue. I think he's overly optimistic. If half the PCs shipping in 1995 have 16M bytes of memory on them, I'll eat this page. And even if Tong is right, Chicago will change the market dynamics considerably, probably at NT's expense.

With the mass market clearly out of NT's reach, Microsoft has shifted its focus to the network server, where Unix is now dominant. No doubt NT will win respectable market share there, but there's no way it will overtake Unix in the foreseeable future. That means Microsoft will wind up in a trench war against a very established competitor, and that's a battle Microsoft hates to fight.

So in the ultimate tribute to IBM, Microsoft is using the old Blue trick of fear, uncertainty and doubt, or FUD, to freeze customer buying decisions. Sez Microsoft, if you'll just wait eight to 12 months, you can have 32-bit capabilities with Chicago. Another year after that and you can get Cairo with its object-oriented file system. And at some undefined point there'll be groupware capabilities built into the operating system. Just wait. Just wait.

The trouble is, customers don't have to wait. All that stuff is available right now from Microsoft competitors. Uh oh. Crack.



Paul Gillin, Editor

Letters to the editor

Right people for the right job

The article, "Client/server breakdown" [CW, Oct. 4] was one-sided. The examples cited resulted from not getting the right budget and/or people to do each section of the project. Why can't management understand that data processing people cannot be masters of everything?

They need some temporary help to do the special tasks that are not usually done.

Get the right people in to do the planning and testing of standards. Hire the right people with special programming talents to do interfaces with different computer systems. Don't accept one choice in selecting software. Make outside consultants inform you if they are getting paybacks for their selection.

Dennis Gilbert
New Bedford, Mass.



Number-crunching doesn't add up

"City limits" [CW, Sept. 27] is blatantly erroneous regarding cities' spending for this purpose.

Our hands-on experience in consulting with local governments across the country suggests annual operating budgets for information systems on the order of \$500 per employee and capital expenditures over a five-year horizon on the order of \$600 per year. Further, we have found that operating expenditures are about 1% of a typical general-purpose local government's budget.

Most local governments wish

they had anything even close to the 4% that the article says they have!

Sheldon S. Cohen
MMA Consulting Group, Inc.
Boston

John Scoggins
John Scoggins and Associates
Danielsville, Ga.

An examination of the statistics presented in "City limits" raises questions about their credibility. If I apply the level of expenditure in the city of Oakland, Calif., then our entire information technology budget would be \$2,500. That's less than the cost of one complete desktop workstation.

Here in Oakland, our information technology budget is about \$10 million per year. At that level, we spend \$2,500 per full-time employee. Based on my experience, that is probably a more realistic level. Yes, it is quite a bit less than the \$7,000 per employee in the private sector, but nothing even close to the figure of 50 cents cited in the article.

Stephen R. Ferguson
Office of communications
City of Oakland, Calif.

Sorting through postal systems

While the story "Postal Service sorts through automation" [CW, Oct. 4] quoted the U.S. Postal Service as saying its "core strategy is to sort mail using bar codes," it was interesting to note that our copy of *Computerworld* did not have a bar code on the address line.

This is because the Postal Service does not have equipment to sort magazines and newspapers that are not "8½ by 11 inches" or "digest size."

There are almost 3 billion pieces of mail a year — newspapers and

magazines such as the size of *Computerworld* — being hand-sorted through all the steps involved with delivery to the subscribers' door, and guess what: There are no current Postal Service plans to offer bar-coding to large, flat-size publications and newspapers.

Dennis Farley
Distribution manager
Fairchild Publications
New York

"PC-based postal kiosk axed" [CW, Oct. 4] omits factual data and espouses erroneous opinions.

The Postal Buddy was not user-friendly. Nor did it provide changes of address quite the way the sidebar indicated. Heaven help us if this is Vice President Al Gore's idea of reinventing government.

Paying more to change addresses is not in the interest of the taxpayer. The United States Postal Service could forego profits on the machines in exchange for floor space if they had realized the projected savings on changes of address, but the procedures that the Postal Buddy provided apparently cost the Postal Service more than planned and provided no savings.

William B. Adams
Symbiotic Security
Springfield, Va.



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► Cartoonist Rich Tennant is taking the week off

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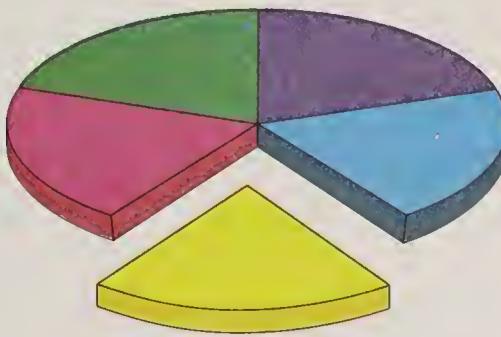
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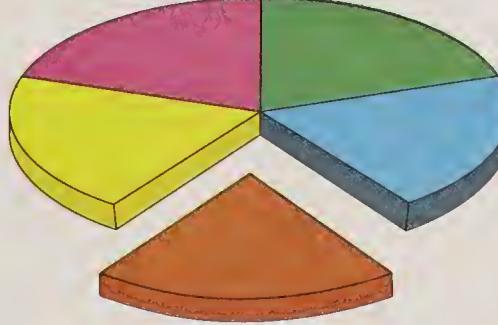
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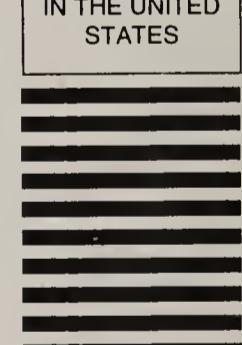


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Thomas Hoffman, Correspondent

(201) 967-1350

Washington, D.C.

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(202) 347-6718

Gary H. Anthes, Senior Correspondent

(202) 347-0134

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Midwest

Ellis Booker, Bureau Chief

(708) 827-4433

Main Editorial Office

Box 9171, 375 Cochituate Road

Framingham, Mass. 01701-9171

(508) 879-0700

MCI Mail: 279-6273

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It may be obvious, but it isn't simple

Jim Stikeleather

Patty Seybold was right when she said we need to make business rules visible and maintainable by users [CW, Oct. 4]. The rate at which business is changing is just too rapid for those of us working in IS to keep up by reprogramming. Users must be able to manipulate and change rules as business circumstances dictate. But here's the catch: There's a world of difference between being on the trail of a solution and having one in hand.

At Kash n' Karry Food Stores, Inc., we've been working for two years to build an information architecture similar to the one Patty envisions. It has turned out to be more difficult than we ever expected.

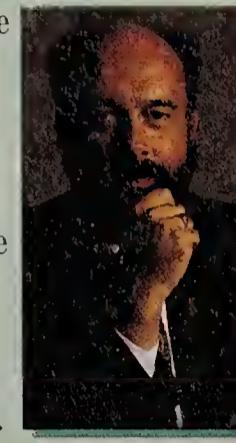
The work we are doing with object technology has led us to a three-tier information architecture. The first tier consists of basic business entities — person, item, truck, etc. — and the relationships among them. The second tier is made up of models, which are groups of entities interacting to accomplish some business purpose. At this level, the concepts of rules and roles are introduced. The third tier consists of views and events that allow observation of and influence on the models.

For reasons of consistency and integrity, IS should retain control of the basic objects, but we've concluded that users should be able to manipulate the rest — rules, roles, views and events. However, three big obstacles block the

way to actually achieving that ideal — technology, people and organizations.

We have not yet found a commercial product that supports the rule/constraint mechanism we need and that can be integrated with the other mechanisms in our object architecture. In the interim, we are preprogramming calculation-based rule types (price X < competitor Y, price X > cost, etc.) and letting users modify the variables. This won't work for long, however, because it doesn't handle rule conflicts or symbolic rule processing.

People also present difficulties. Human beings don't operate by well-formed, well-defined, consistent rules. Many of the business rules people operate with are based on habit



rather than logic, are highly exception-driven and cannot generally be described by the user with any degree of accuracy.

Ask a group of people performing the same function how they do their jobs and you will almost always get variations on a common set of rules and another set of highly individual rules. None of these will necessarily be better than others because the business has been operating with all of them in effect. In fact, it can be very dangerous to impose uniformity because you may actually upset some important balance in the ecology of the business.

Organizations are also dauntingly complex. Rules vary among departments, which is why accounting and marketing can start with the same data and generate very different spreadsheets, graphs and analyses. If you do find some universals, such as a pricing strategy, you still need to be careful because their universality may be more apparent than real. Lower-level employees, exercising good judgment, may ignore price policy in some cases.

Patty was right. We do need to develop visible rules and put them in the hands of users. Dealing with the complexities involved is delicate and painstaking work, which cannot be accomplished overnight. We'll be happy if we can do it in the next three to five years.

Stikeleather is director of systems development at Kash n' Karry, a grocery chain based in Tampa, Fla.

You get what you don't pay for

When you make computing and communications free, you encourage waste and abuse

Michael Schrage

making corporate data systems as accessible, transparent and interoperable as technically possible. Using client/server, they're pushing to cut transactions — retrieving a file, updating an inventory, scanning a database — as close to zero as possible. In econo-speak, they're turning teleprocessing into a "free good," much like the air we breathe and the internal telephone calls we make. This is a horrible, counterproductive mistake.

What happens when organizational goods and services that were once costly become free? You get a blizzard of paper memos. You hear 40 voice-mail messages a day. You get deluged with invitations to immaculately designed desktop media presentations.

Remember when spreadsheets were actually time-consuming and hard? When VisiCalc and Lotus' 1-2-3 made spreadsheeting a snap — made numerical analyses into "free goods" — companies caught matrix madness. Indeed, many corporate budget committees now refuse to look at more than three spreadsheet scenarios because they've learned how wasteful it is to compare 30 versions.

When the marginal cost of an enterprise-wide replication of a Notes database or a multimedia presentation drops to zero, guess

what your virtual in-basket will look like.

Offering "filters" and "agents" to screen out the cyberscrub is exactly the wrong answer; it avoids the problem instead of confronting it. You fight an economic problem with an economic solution. Organizations must stop turning information technology into a free good.

Media without market discipline breeds pathologies of wastefulness. Markets matter. That's why IS needs to invest more thought in designing chargebacks than it does in adopting CASE. Why should E-mail bandwidth be free? Require a digital "stamp" to send it.

The reason our world soaks in pollution is that our natural resources have been managed as free goods. Who cares if we mess them up a bit? By relentlessly trying to make internal computing free, companies similarly mismanage their data resources. The ecology of economic organizations demands that managers understand that the most valuable things in organizational life aren't free.



Schrage is a fellow at the MIT Sloan School Center for Coordination Science and the MIT Media Lab. His Internet address is schrage@media-lab.mit.edu.

Managing Editor of Special Projects

Catherine McCrorey

News Bureaus

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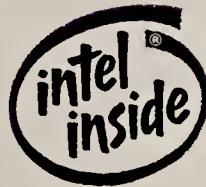
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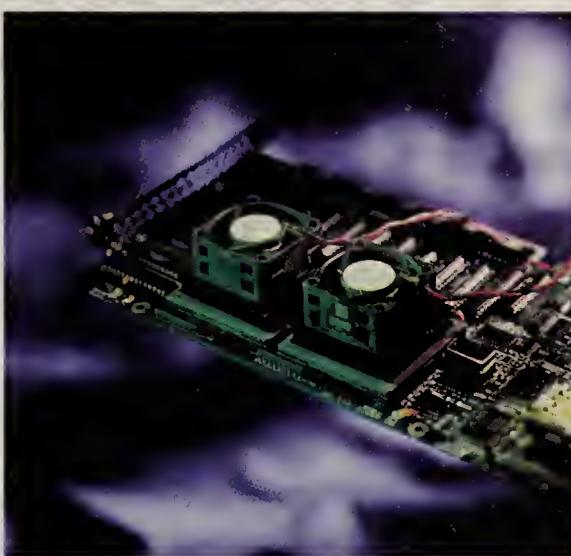


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LOTUS 1-2-3 RELEASE 4 RATED #1. CAN MICROSOFT BEAT A STRAIGHT FLUSH?

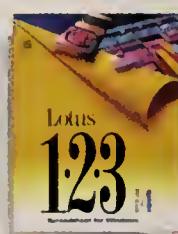
Every year Lotus[®], Microsoft[®] and the others go head-to-head in reviews by the top industry publications. So far this year, the results are resounding. And redundant.

Lotus 1-2-3[®] Release 4, Ami Pro[®] 3.01, Freelance Graphics[®] 2.01, Approach[™] 2.1 and Organizer[™] 1.1 are collecting honors for setting new standards in power and usability. With scores that are setting new records in their categories.

In a matter of months 1-2-3 Release 4 has already been acknowledged by reviewers and users as the spreadsheet of choice and the way of the future. It earned the highest Windows[™] spreadsheet score ever by *InfoWorld*. And more recently, an independent usability study showed that 67% of Microsoft Excel 4.0 users tested say they would prefer to be using the new 1-2-3 Release 4 for Windows.

Ami Pro 3.01 word processor is our Cinderella story. For years it's been ranked above both Word and WordPerfect[®] by reviewers but many users had been reticent to make the switch. Now that's changed. *PC Computing* has rated Ami Pro ahead of WordPerfect 5.2 in 8 out of 8 categories. And users by the hundreds of thousands are discovering it's a better fit.

Freelance Graphics 2.01 presentation graphics software is once again outshining Microsoft PowerPoint[®] and Harvard Graphics. In *PC World* Freelance dominated the #2 finisher by the largest margin ever. In *Software Digest* it earned a five-star rating vs. three stars for PowerPoint and



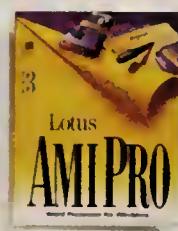
InfoWorld Windows Spreadsheet Ratings:

1-2-3 Release 4 (8/93)	7.8
Excel Release 4.0 (10/92)	6.9
Quattro Pro Release 1.0 (10/92)	6.5



Approach is a big, big winner.

PC WEEK 6/28/93



PC/Computing Word Processor Scores 8/93:

Lotus Ami Pro 3.0	92.0
Microsoft Word for Windows 2.0c	87.2
WordPerfect 6.0 for DOS	73.6
WordPerfect 5.2 for Windows	73.4



Organizer is one of the most appealing Windows applications yet.

PC WEEK 9/92



PC/Computing Presentation Graphics For Windows Scores 9/93:

Freelance Graphics Version 2.0	98.9
Harvard Graphics Version 2.0	80.4
Persuasion Version 2.1	74.8
PowerPoint Version 3.0	83.6
WordPerfect Presentation Version 2.0	86.8

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*Macintosh PowerBook, Macintosh II, and Macintosh IIx. **Until 12/31/93.

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Intel to verify PC Pentium upgrades

By Michael Fitzgerald

Intel Corp. has established a program intended to iron out wrinkles in its Pentium upgrade strategy.

The Intel Verification Program, which has lined up support from IBM PC Co., Compaq Computer Corp., NCR Corp. and some 40 other vendors to date, will tell users whether the system they are purchasing is guaranteed to be Pentium-upgradable.

Intel designed the program in the wake of vendor confusion over the proper way to implement an upgrade-oriented OverDrive version of Pentium, called the P24T, which will ship in the second half of 1994.

Changed expectations

An Intel official freely acknowledged that the company had developed the verification program to modify its initial ex-

pectations on a 486-to-Pentium upgrade strategy.

"We thought [upgrades] would be focused on DX2 to Pentium, and it turns out that ... [Pentium upgradability] is designed in from low-end SXs," said Paul Otellini, an Intel senior vice president. Otellini said the prevalence of universal motherboards, many of which can support any processor from a base 486SX to a top-of-the-line DX2 through the flick of a switch, caught Intel by surprise.

Analysts said Intel had to establish the verification program to prevent users from buying the wrong version of the upgrade chip. They said the lengthy development lead time for the P24T had caused some of

the problems for Intel.

"Basically, it's a cover-my-ass strategy by Intel," said Jeffrey Henning, an ana-

lyst at BIS Strategic Decisions in Norwell, Mass.

Intel will charge hardware makers \$5,000 per model tested to verify that a system is upgradable, with a cap of \$50,000 per year. Otellini said the price was perhaps half the cost that Novell, Inc. charges to certify a server as NetWare-compatible, for instance. The nominal fees are not expected to cause vendors to raise system prices.

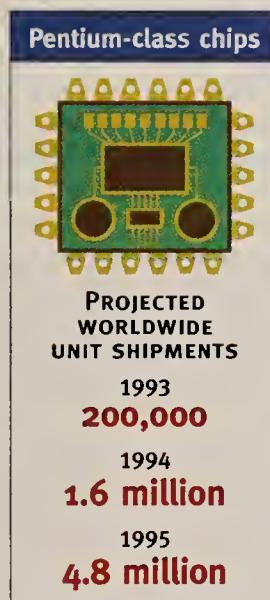
Black, white or blue

Otellini said the verification program, combined with the upgrade strategy, should eliminate any user concerns about the color of their upgrade socket.

Various systems use blue, white or black as the socket color. Intel will produce several different versions of the P24T, and users will only need to know what system they have to pick a chip.

Once tested, systems will receive a small logo to show they are certified. Otellini said the logo will be less prominent than the "Intel inside" campaign.

He also said Intel will continue to use the verification program because there will probably be "complexities" in upgrading from Pentium to future Intel chips.



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Chip dynamics



It fits in a thimble, but this new 64M-bit dynamic RAM chip from IBM and Siemens AG can hold up to 6,400 pages of double-spaced text, which would cover two reams of paper, or, using a common industry measure, fill roughly 2½ volumes of the Encyclopaedia Britannica. Currently available in sample quantities, the DRAMs are among the first 64M-bit chips in the industry.

Compressed data will go from DOS to OS/2

Stac utility steps on Microsoft plan to encourage incompatibility with OS/2

By Ed Scannell

At the upcoming Comdex/Fall '93 show, Stac Electronics, Inc. will announce that it is bundling a conversion utility with its Stacker for OS/2 compression program that lets OS/2 and DOS users transfer compressed data between the two operating systems.

The conversion utility converts data compressed with DoubleSpace, the compression technology used in Microsoft Corp.'s MS-DOS 6.0 and its upcoming Version 6.2, as well as data compressed with AdStor, Inc.'s SuperStor utility, which is provided with IBM's PC DOS 6.1.

Stac has timed the introduction to coincide with the debut of IBM's new version of OS/2, code-named Ferengi, which works transparently with Intel Corp.-based PCs running DOS and Windows. Stac's conversion utility is also compatible with Ferengi.

Stac officials said Stacker for OS/2 with its conversion utility makes it easier for DOS and Windows users to evaluate OS/2; they added that Stac is actively supporting OS/2 and Ferengi.

Incompatible with OS/2

Until now, DOS users who used DoubleSpace had no way of putting OS/2 on their systems because it was incompatible.

"DoubleSpace is a tactical effort on Microsoft's part to stop encroachment of OS/2 onto their turf."

onto their turf," said John Bromhead, Stac's vice president of marketing.

The inability to easily transfer compressed data from MS-DOS and PC DOS over to client/server operating systems such as IBM's OS/2 2.1 and Microsoft's Windows NT has been a minor nuisance for some corporate users.

Microsoft officials recently said one of the items on users' wish lists for Windows NT was compatibility with DoubleSpace. They said it would most likely be provided in the next update of the operating system, due sometime next year.

With the release of MS-DOS 6.2 and the improvements made to DoubleSpace — most notably the compression utility's Uninstall feature — Stac believes Microsoft has left the door open to make significantly more Stac sales.

"Their Uninstall feature will prove to be a big boon to users who want to remove DoubleSpace from their drives," said Ann Galdos, Stac's product marketing manager for Stacker 3.1 for Windows and DOS.

Microsoft has made several improvements to DoubleSpace including a feature

called DoubleGuard that better protects users against data corruption. Some users said problems in DoubleSpace caused them to lose data earlier this year.

Strategic shift

While Stac will continue to support DOS and Windows, the company's strategy will

increasingly focus on more advanced client/server operating systems and network operating systems such as OS/2 and Novell, Inc.'s NetWare and UnixWare.

"Our vision is taking on more of a corporate view. We believe if you compress data once that wherever you send it over the wires, you can still view it and it stays compressed," Bromhead said.

To reach this goal, Stac believes it must have competitive products on all major platforms. Currently, it has versions for DOS and Windows, OS/2 and the Macintosh. Novell will soon integrate a version with its Novell DOS 7.0.

"I think you will see our LZS compression engine moving to every piece of client software that Novell does," Bromhead said.

"DoubleSpace is a tactical effort on Microsoft's part to stop encroachment of OS/2 onto their turf."

—John Bromhead,
Vice president, marketing
Stac Electronics

Board Watch

Christopher Lindquist

Ubiquitous Microsoft



It's been a few months, but I'm finally back on track, so hello again.

My new post has taught me a couple things: One is that users are probably spending a good

number of MIPS on decidedly nonproductive pursuits (read: games); the other is that Microsoft, like McDonald's, really *is* everywhere. Don't be surprised to see it in your cable TV box or your car in the next couple of years.

Speaking of Mickey-D's, would you buy a cookbook from them? Somehow I think *Building the Perfect Burger* by R. McDonald wouldn't be much of a seller except on the humor charts. Angry nutritionists would probably picket any bookstore with the stomach to carry it.

OK then, would you buy a book from Microsoft on creating bug-free software? The punch line is that not just one, but

two such tomes exist. What's even funnier is that some Internet surfers have read them and say they're *good*.

One message summed it up nicely: "The review given by one of our engineers about a month ago recommended that we read [the books], even though it appears Microsoft programmers haven't."

If you're interested in discovering Microsoft programming secrets so secret even Microsoft doesn't know about them, look for *Writing Solid Code: Microsoft's Techniques for Developing Bug-Free C Programs* by Stephen A. Maguire (\$24.95) and *Code Complete: A Practical Handbook of Software Construction* by Steven C. McConnell (\$35).

Would you know my name?

Apple reported recently that it had sold 50,000-plus Newtons worldwide. Reports from purchasers indicate that 15% have gotten the handwriting recognition to correctly spell their name in fewer than three tries, 55% have not and 27% have changed their names to "FrL3t." The other 3% no longer remember their names.

The Newton's handwriting recognition is not the only problem, according to the 'net.

One user reports the following: "According to rumor, certain early units have a hardware defect; several users on the 'net have reported that after getting their units replaced, they are having a much better time with Newtons."

"If you have severe problems with a flickering screen, unstable pen tracking [to test this, turn off both recognizers and try drawing circles or straight lines]; if your Newton won't start up when you want it to, even on a fresh set of batteries; or your Newton won't recognize handwriting when the AC power adapter is plugged in, contact (800) SOS-APPL; you may have a bad unit. Don't worry, all the Newtons in existence are still under warranty."

Risk list

Here's good news for anyone without Internet access who still wants to get a listing from the "comp.risks" group, which regularly compiles a variety of computer risk-related information such as viruses, hacking and bugs into a file. You can now have the "risk" list faxed to you.

Call (818) 225-2800 or fax (818) 225-7203 for more information. If you do have Internet access and would still like to get the fax, send E-mail to risks-fax@vortex.com.

Gates gotcha

It appears that the electronic Bill Gates impersonator has surfaced once again—this time inside Microsoft. An Internet subscriber says that a number of Microsoft employees checked their E-mail one morning and discovered messages from "Billg" saying they were fired.

The real Bill apparently is not amused, and the pretender had best stay hidden

if he wants to keep his head—and his job.

Back to the future

Bulletin board services are always good for a conspiracy theory or 20. This is a recent favorite concerning talks between Apple and Next, Inc. to put Next-Step on the PowerPC platform:

"It would be a homecoming for Steve Jobs. I have a warped theory that the whole reason for Next was that Steve supported a faction in Apple that wanted the Mac [operating system] to evolve in a Unixy direction, but the new corporate powers wanted otherwise."

"That faction wanted to prove them wrong, and Jobs was in agreement. Final vindication would be that Apple swallows [Next] and uses their product, and Jobs returns to the board to lead them back into the sunlight."

Stranger things have happened, and the future of Digital's Alpha chip may be one of them.

Talk was floating on the Internet that Digital is going to sell its Alpha chips to Mercedes Benz to operate "engine management, alarm systems, navigational aids" and other luxury auto toys. That may be, but will it run Windows NT?

Lindquist is technical editor at the upcoming magazine *Electronic Entertainment*. He can be reached electronically over MCI Mail at clindquist, CompuServe at 73361,263 or the Internet at chrisl@netcom.com.

Briefs

Manage the project

Microsoft Corp. recently previewed Version 4.0 of its Project project management software, which will tentatively include Wizards, support for a true drag-and-drop protocol for making assignments and integration with Schedule+. Separately, Microsoft is offering a \$100 rebate on Microsoft Office and Microsoft Works for the Macintosh through Jan. 31. Version 4.0 of Office for the Macintosh will ship by spring.

Apple pushes CD-ROMs...

Apple Computer, Inc. will sacrifice an estimated \$100 million in profits this year by selling its CD-ROMs at cost to seed the market for interactive multimedia products, Executive Vice President Ian Diery said recently. He predicted that the surrender of \$100 in profit on each \$329 CD-ROM drive will result in sales of 1 million Apple CD-ROM drives this year, up from 43,000 last year. Diery said Apple will also soon start selling equipment enabling CD-ROM programs written on the Macintosh to run on IBM-compatible computers.

... and Newton on the Mac

Apple has made several moves to get its Newton MessagePad connected to

the outside world. Next week will see the arrival of the Apple Wireless Messaging Service, which will allow domestic Newton customers to receive wireless messages through the paging network provided by MobileComm, a subsidiary of BellSouth Corp. Monthly fees will start at \$21. Apple has also begun shipping the Newton Connection Kit for the Macintosh, a key integration product through which users can connect their MessagePad to a Macintosh to create, view, edit, synchronize and back up their MessagePad information. A Windows version is to ship later this fall.

On the PowerPC front

In other Apple news, the company has announced that seven more developers have unveiled plans to deliver native versions of their applications for the Macintosh PowerPC. They are Artworks Systems NV, Canton Software, Inc., Fractal Design Corp., Graphisoft, Great Plains Software, Itedo Software GmbH and Wolfram Research, Inc. A native application is one that has been recompiled for the PowerPC chip. A total of 18 developers have announced native support on Apple's platform.

Windows backup

Symantec Corp. recently released Version 3.0 of the Norton Backup utility for Windows, which supports DOS 6.0, can be customized and allows data

backup of network file servers on Novell, Inc. NetWare networks.

E-mail the professor

Lotus Development Corp. has established the Lotus Education Consortium, under which universities are invited to share data electronically using Notes and CC:Mail. Lotus also announced that Computerland Corp. will offer customers the option of having Lotus SmartSuite preinstalled on their systems.

NCR opts for AT&T logo

Seeking to establish brand-name recognition with retail channel consumers, NCR Corp. announced that its I486SX PCs sold through retail computer and consumer electronics stores will carry the AT&T logo and price tags starting at \$999. Lechmere, based in Woburn, Mass., and Incredibe Universe in Fort Worth, Texas, will be among the first stores to offer the PCs under the new program.

Energy-compliant desktop

Acer America, Inc. has made its consumer-oriented Aceros desktop line compliant with the Environmental Protection Agency's EnergyStart program.

Chip ID bracelet

With the theft of computer chips rising, Intel Corp. plans to become the first semiconductor company to stamp

serial numbers on its microprocessors. By stamping an individual number on each postage-stamp-size chip, it will be possible for police to return recovered chips to their rightful owners, an Intel spokesman said last week. Two weeks ago, TEG Micro Technology in Fremont, Calif., was hit by armed robbers who escaped with \$500,000 in chips, including many I486 microprocessors that retail for up to \$463 apiece.

Toshiba service

Toshiba America Information Systems, Inc. in Irvine, Calif., is scheduled this week to launch several service and support programs, including an optional three-year limited warranty on selected portable and desktop products. Another option is no-fault coverage for screen damage to portable computers.

PowerPC silicon

IBM and Motorola, Inc. recently said they have produced the first silicon for their second PowerPC microprocessor, the PowerPC 603.

Symantec distribution

PC distributor Tech Data Corp. in Clearwater, Fla., has signed an agreement to distribute Symantec Corp.'s application and system software, including Norton Utilities, Norton Desktop for Windows, Norton Administrator for Networks, Q&A, Act! PCAnywhere and Symantec C++.

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emulation software, a MAU,
intelligent hubs, token ring adapters,
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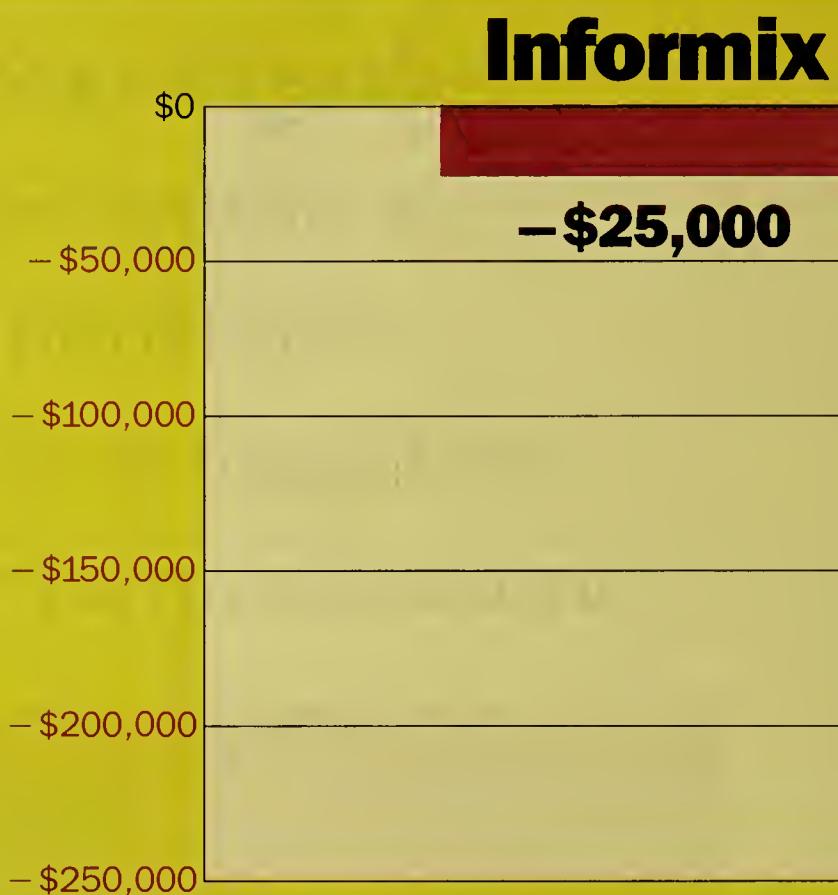


ANDREW

Cost of UNIX-to-DB2 Database Connectivity.

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Informix only requires one jump from its gateway to an IBM database while Oracle and Sybase require two—adding processing time and expense. The costs on the chart reflect an unlimited number of users going from a UNIX server to DB2 on the MVS platform, and are based on current, published price lists for each relational database vendor.



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CW11/1

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PC-X fills in interoperability holes

By Jean S. Bozman

A new class of software is blurring the edges of PC applications and the X Window System presentation of enterprise software. PC-X software, as it is being called, connects PC users with mainframe and Unix applications shared throughout a corporation.

Users who have tried PC-X software said it is an easy way for them to share applications across an enterprise. It allows PC users to work with familiar spreadsheets and word processors one minute and to access data stored on Unix servers or IBM mainframes the next.

Priced at \$500 or less, PC-X licenses are an inexpensive way for PC users to

access shared X-based applications, information systems managers said. Buying an X terminal or Unix workstation to run the X Window System would cost several thousand dollars more.

Because the X Window System runs the same way no matter where it is displayed, PCs can display the same graphical information shown on Unix workstations or X terminals — or even on IBM 3270 terminals. The X protocols, managed by the X Consortium in Cambridge, Mass., define the uniform mechanism by which a terminal, workstation or PC displays graphical information over a network.

PC-X software's leading feature is flexibility, IS managers said. Fresno County in California is using PC-X software on OS/2 and PC DOS machines to view files on IBM RS/6000 Unix servers and an IBM mainframe.

"We're replacing IBM 3270 terminals with PCs capable of emulating X Window [System]," said Will Jacobson, a senior systems programmer who oversees court management and geographical information systems running on networked RS/6000s. The OS/2 machines run an IBM product called PMX, and the DOS machines run PC-X software from Hummingbird Communications Ltd. in Markham, Ontario.

Is it a client?

In a twist on the PC-X approach, Unix workstations can now run PC software using X11 standards. SunSelect, Inc.'s Wabi software, introduced

in May, allows Microsoft Corp. applications to run unchanged on Unix workstations running X11 protocols. Wabi works on Sun Microsystems, Inc., IBM and Hewlett-Packard Co. workstations, and more vendors are expected to sign up to support it in 1994.

not wish to be identified, said PC-X software is a practical way to link PC decision-support software with mission-critical, number-crunching applications running on Unix servers.

"There are no Unix desktop programs to speak of," the manager said, adding that there are notable exceptions, such as a Unix-compatible version of Lotus Development Corp.'s Notes. Unless the Common Open Software Environment's common Unix desktop boosts personal Unix applications, he said, PC-X will let users mix and match PC and Unix applications on the same screen.

Industry analysts said they believe PC-X software will push X far beyond the estimated 2 million users of Unix workstations — and hundreds of thousands of X terminals worldwide — in the next few years. Leading PC-X vendors include Network Computing Devices, Inc. in Mountain View, Calif., AGE Logic, Inc. in San Diego and Hummingbird.

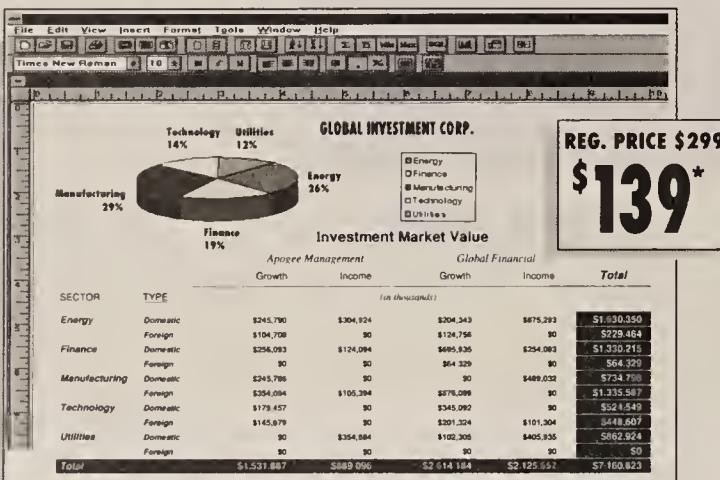
Growth market

About 396,000 PC-X licenses will ship this year, compared with about 300,000 X terminal shipments expected by year's end, according to market research firm International Data Corp. [CW, Oct. 25].

The X Window System is for large corporations that want all their users to be able to access common information, said Peter Shaw, president and chief executive officer at AGE Logic. "IS managers are learning that the protocol that allows them to connect heterogeneous components on a network is X," he said.

Users said they realize that network and systems vendors have a lot of homework to do before distributed computing is commonplace. Until then, PC-X software will allow them to take a shortcut to interoperability. For Fresno County, that means accessing mainframes, minicomputers and Unix servers from the comfort of a user's PC. "When you start to go beyond your PCs and into the network," Jacobson said, "your users need to be able to get out to these multiple platforms."

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Agents get learn-at-home system

What is believed to be the largest private use of a "distance learning" system — Prudential Insurance and Financial Services' system to provide training, development and certification to 17,000 insurance agents at 2,800 locations — was made public recently.

The so-called Prudential Learning System was developed by VMI Learning Systems, an Iselin, N.J., firm that is under a multiyear contract with Prudential for the application.

The system combines a number of technologies into a "learning center." The center contains a PC with modem, a CD-ROM player and a videotape player.

Every day, a Prudential host downloads curriculum, sales and customer information to the learning center workstations. During the update, the agent's test scores are uploaded back to the host, where student progress is measured and tracked in weekly reports to field and headquarters managers. —Ellis Booker



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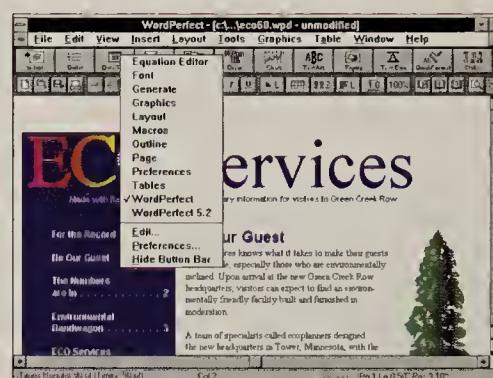
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Desktop Computing

New Products

SBT Accounting Systems has added a suite of graphical customization tools to the Professional Series 2.5, its advanced network accounting system for Windows and DOS.

According to the Sausalito, Calif., company, the series gives computer consultants and end users the power to easily configure reports, screens and commun-

ications for SBT Pro Series.

The tools allow users to tailor reports, customize data entry, access accounting data from remote sites, display custom queries and share accounting information with other Windows applications.

The system costs \$895 per module for the standard Multiuser version and \$1,295 per module for the Unlimited (source code) version.

► **SBT Accounting**
(415) 331-9900

Poe-It Management Services, Inc. has introduced MieroMan for Windows Time Entry, a Windows-based module.

According to the Santa Monica, Calif., company, the module was designed to bring an easy-to-use graphical user interface to time entry, a function of MieroMan II, the company's PC-based project and staff management system.

Highlights include a spreadsheet format for entering project and nonproject work on one screen and expanded infor-

mation about project events. Users can designate time as billable or nonbillable, and the product can facilitate accounting for expenses.

MieroMan for Windows Time Entry comes bundled with MieroMan II for DOS and runs on any IBM PC or compatible with 640K bytes of memory and 7M bytes of hard disk space.

The complete MieroMan II package, including MieroMan for Windows Time Entry, costs \$2,895.

► **Poe-It Management Services**
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Microsoft Corp. has announced Microsoft Windows Sound System Version 2.0, a product that offers improved voice recognition and audio compression. The system was designed to enable the integration of audio with any Windows application.

The Windows Sound System is available in two versions: one includes the Windows Sound System software and a microphone; the other offers a Windows Sound System audio board and headphones along with the software and microphone.

According to the Redmond, Wash., company, users who have audio boards can inexpensively add voice recognition, annotation and selective proofreading to every application on the Windows operating system.

Features include Microsoft's custom-designed directional microphone and a voice-recognition application called Voice Pilot.

Prices start at \$79.
► **Microsoft**
(206) 882-8080

Solomon Software has introduced the Solomon IV/Windows System Evaluation Kit on CD-ROM, a product designed for anyone who wants to become familiar with Solomon IV's open architecture and industry-standard tools such as Novell, Inc.'s NetWare SQL and Visual Basic.

According to the Findlay, Ohio, company, the product includes Novell's NetWare SQL (five-user license), General Ledger, System Manager, Order Processing, Inventory, Accounts Payable, Accounts Receivable, the R7R SQL Report Writer and the Solomon IV Customization Manager.

The product costs \$99.
► **Solomon Software**
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Nashen + Associates has introduced PaperClip Imaging Software, an access tool for desktop document management.

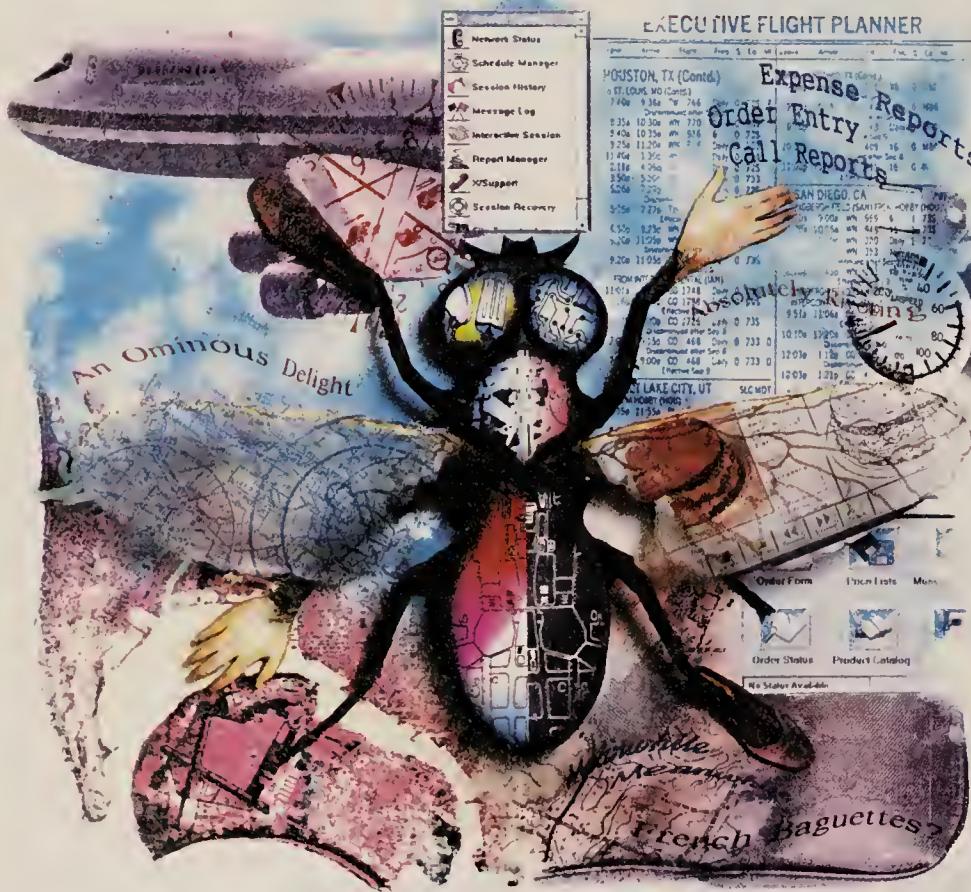
According to the Montreal company, PaperClip permits users to access data files, electronic mail, scanned images and fax documents from existing software applications.

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in a tiny center seat, in coach, staring blankly at a fly nimbly exploring the OXYGEN PANEL above him. It had come down to a scheduling conflict. One more FREE product seminar, half-day, inevitably bad deli sandwiches... potato chips that had gotten too close to the kosher dills and gone soggy. Or this junket to clean up yet another set of branch communication difficulties in Opelika, St. Louis, and San Antonio. So the picture of this fly on the ceiling RUBBING ITS FRONT LEGS TOGETHER with an ominous delight didn't have the significance for him

it might have had he seen that MEANWHILE, BACK AT THE SEMINAR THE REMOTEWARE FOLKS WERE SPINNING COLORFUL TALES OF SUCCESSFULLY-IMPLEMENTED FIELD COMMUNICATIONS SYSTEMS, HOLDING CHARLIE'S TECHNO-PEERS FROM COMPETING COMPANIES CAPTIVE WITH THE PROMISE OF THOUSANDS OF FULLY-AUTOMATED, EASY-TO-MANAGE AND UNATTENDED DIAL-UP COMM SESSIONS, AND RIVETING ACCOUNTS OF REAL COMPANIES WITH HUNDREDS OF MOBILE CORPORATE LAPTOPS AND REMOTE BRANCH OFFICES USING CENTRALLY-CREATED AND MANAGED ELECTRONIC FORMS, DOCUMENTS, AND REPORTS, ALL LINKED TO CENTRAL SYSTEMS AND DATABASES, AND ALL NEATLY SUPPORTED BY INTEGRAL ELECTRONIC SOFTWARE DISTRIBUTION CAPABILITIES! So these were the things Charlie was missing: solutions to

the very problems that had made this one more night away from home a necessity. That, and what actually turned out to be a delicious RemoteWare lunch of pasta salad, FRENCH BAGUETTES with prosciutto and mozzarella, and fresh strawberries.

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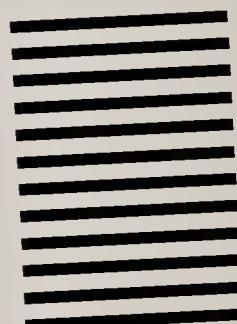
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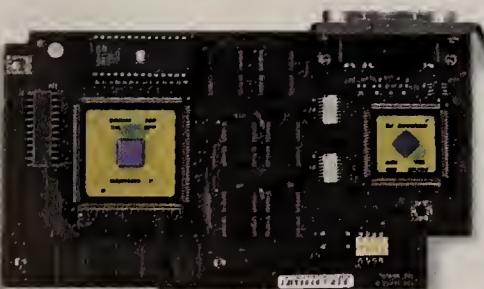


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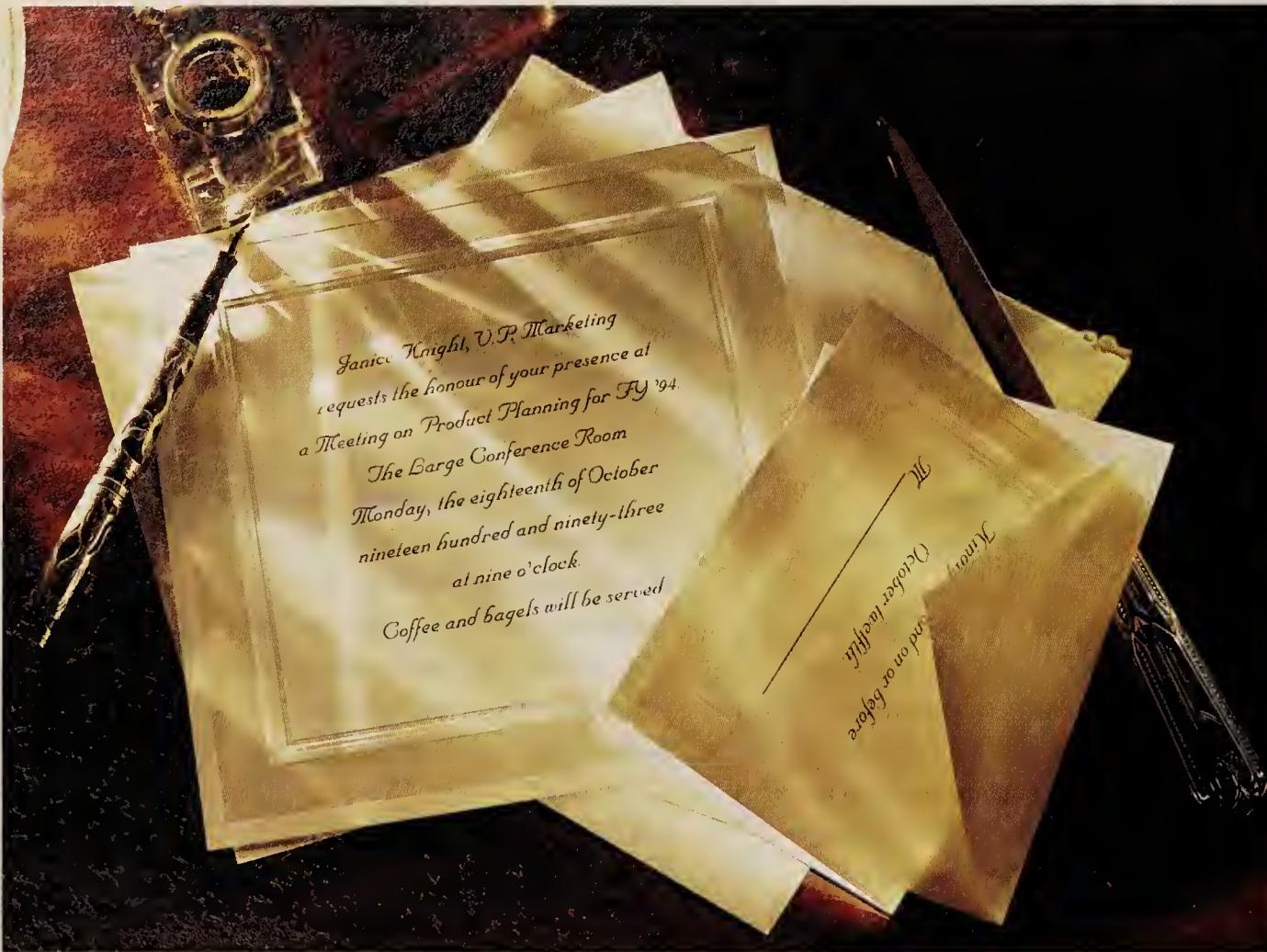
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EXACTLY WHAT DO PEOPLE NEED THESE DAYS TO GET THEM TO COME TO A MEETING?

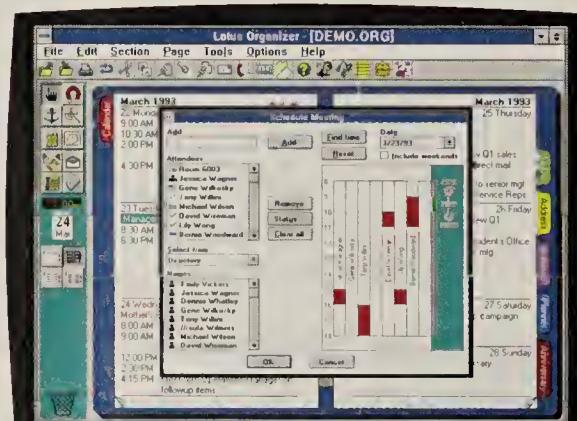


INTRODUCING ORGANIZER 1.1 WITH GROUP SCHEDULING.

If you've ever tried to pull a group meeting together you know all too well how frustrating it can be. Now Lotus Organizer™ 1.1 Personal Information Manager for Windows™ works across your existing cc:Mail™ network to make organizing a meeting – as well as organizing your day – easier than ever.

You simply choose who you want to attend from the mailbox list. Organizer shows you a graphical view of busy and free times so you can pick out the optimal meeting time. Then Organizer delivers an invitation via cc:Mail. Invitees can accept, decline or delegate to someone else – with a single mouse click. Organizer tracks responses automatically. No chasing people

down in the halls. No phone tag. Just the easiest way ever to plan a meeting.

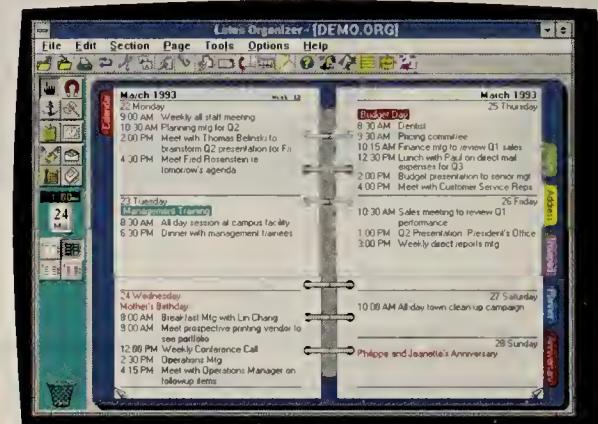


Lotus Organizer with group scheduling takes the guesswork – and the footwork – out of meeting planning.

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For starters, Organizer uses existing cc:Mail directories to simplify installation. Invitations can be sent to anyone on the network even if they don't

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With an on-screen calendar, a to-do list, an address book, a note pad and an anniversary reminder built into one package, Organizer is a powerful personal tool that's fun to use.

Both Organizer and cc:Mail have exceptionally friendly Windows interfaces – help calls are minimal, and your life is made a little easier.

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Organizer 1.1 includes all the personal management tools that made Organizer 1.0 the best product of its kind for Windows. Essentially, Organizer is a day planner – a *really* smart day planner with the ability to link related tasks, names and phone numbers. It is an on-screen calendar, a to-do list, an address book, a note pad and an anniversary reminder, all rolled into one. Organizer will even sound an alarm to remind you of a commitment – like that meeting you're invited to.



Find out more about how Organizer could work for your organization, call **1-800-872-3387, ext. 9170**, or visit your Lotus Authorized Reseller. No invitation necessary.

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Servers

Data General augments Aviion with 5500 system

By Craig Stedman

Data General Corp. last week followed up its late June introduction of enterprise-oriented Aviion servers based on Motorola, Inc.'s superscalar 88110 microprocessor with the addition of a low-end AV 5500 system targeted at small-business and departmental users.

Because of the 5500's low cost, DG said it should also be a key component of Aviion clusters scheduled to go into beta testing in December and ship in February. The clusters initially will be built around Oracle Corp.'s Oracle Parallel Server database, a parallel version of Oracle 7.0.

Sybase, Inc.'s Sybase Replication Server software for copying data between multiple Sybase databases will also eventually be supported for clustering purposes, said Stephen Gardner, DG vice president of Aviion marketing.

Support for two

The 5500 supports two of the 40-MHz 88110s, compared with four on the mid-range AV 8500 and a planned 16 on the high-end AV 9500. The 5500 can handle 20 to 125 users and is rated for uniprocessor performance of 66 transactions per second, DG said.

Hardware pricing starts at \$14,490 with 32M bytes of memory and a 520M-byte disk drive, according to the Westboro, Mass., company, which last week reported another loss and more layoff plans (see chart page 145). The DG/UX operating system is priced separately, with a 100-user license costing \$10,000.

Gardner acknowledged that DG's AV 4600 low-end models had been "looking a little old" compared with rival Unix systems from Hewlett-Packard Co., IBM and Sun Microsystems, Inc. "Most of our business today is coming out of the higher end," he noted.

Jim Brennan, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H., said the 5500 should get DG back into the low-end race.

Computer Associates International, Inc.'s CA-Unicenter is scheduled to ship on DG hardware in early 1994.

"They have a very focused niche market" in small to medium-sized accounts, Brennan said. "They know what they're going after and they're not trying to spread themselves too thin."

Foxworth-Galbraith Lumber Co., a Dallas lumber and building materials supplier that has used DG's proprietary Eclipse MV systems in its stores for the past 15 years, is in the process of switching a pilot Aviion installation from an AV 4625 to a 5500, said Jack Foxworth, chief financial officer.

High expectations

The company wants to shift its 50-plus locations to Unix systems during 1994, Foxworth said. The 4625 has performed "admirably" thus far and Foxworth-Galbraith has "high expectations" for the 5500, but it also plans to look at the IBM RS/6000 and other Unix platforms, he added.

Foxworth noted that the pilot is meant in part to test an in-store software package that has not been available on the Aviion line until now. "We just want to make sure it will run on Aviion and kind of get a bird in the hand before we put it all out to bid" later this year, he said.

Ramona Loudon, senior technical analyst at Sky Chefs, Inc., an airline catering firm based in Arlington, Texas, said the promised clustering support "could certainly prove interesting, especially if it's built for Oracle." Sky Chefs uses Oracle as the main database with its Aviions, she added.

SAS rolls out update

Products serve multiple facets of data management

By Gary H. Anthes

SAS Institute, Inc. has begun shipping an updated line of tools for information management, analysis and presentation. Release 6.09 of the SAS System contains several new products and supports three new environments — Microsoft Corp.'s Windows NT, Digital Equipment Corp.'s Alpha AXP workstations running OpenVMS and Convex Computer Corp.'s ConvexOS.

One new product, available previously in a beta version, is SAS/CPE for Open Systems, which the company said is the only system- and network-performance tool available for Unix systems. It runs under Sun Microsystems, Inc.'s Solaris, Hewlett-Packard Co.'s HP/UX and IBM's AIX.

SAS/CPE takes performance data from commercial network products and summarizes, analyzes and reports it in accordance with user-specified parameters. It accepts feeds from Sun's SunNet Manager, Cabletron Systems, Inc.'s Spectrum, HP's Performance Collection Software, Unix accounting data, Landmark Systems Corp.'s Probe/Net and Probe/X and Concord Communications, Inc.'s Trakker.

Air Products and Chemicals, Inc. in Allentown, Pa., runs SAS/CPE on a Digital Alpha AXP workstation to analyze performance data coming from a VAXeluster via the VMS monitor command. James Hogarth, principal information technology specialist, said SAS/CPE is a better tool than the alternative, Digital's Performance Solution.

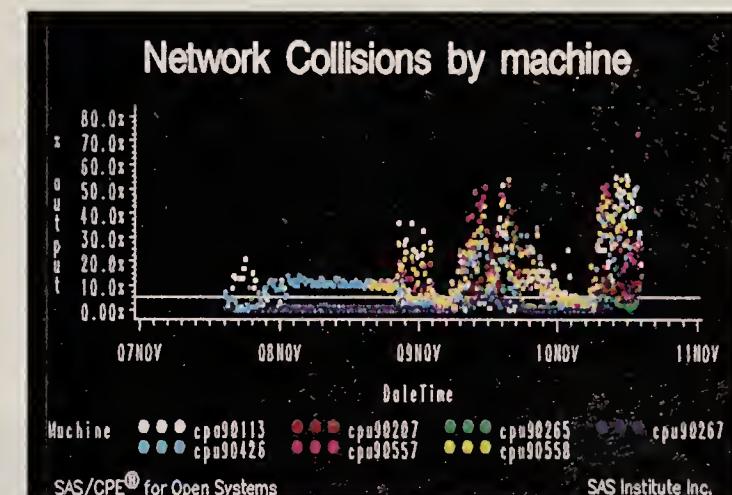
"SAS/CPE gives you a nice way to store and track data for long-term analysis. And it puts data in SAS format, which I am very familiar with," Hogarth said.

SAS/CPE for Open Systems can be licensed for an introductory first-year fee beginning at \$2,940.

SAS also introduced SAS/Access for direct and transparent access to SQL Server and databases from Oracle Corp., Sybase, Inc. and

Ingres Corp. SAS/Access interfaces allow people to use these database management systems without having to create intermediate files, as was the case. It is priced at \$695 for a one-workstation, first-year license.

Merrill Lynch & Co. in Somerset, N.J., has been benchmarking new SAS components under NT for about three months. "We've been real pleased with the SAS implementation part, but we've been a little bummed by NT overall," said John Crawford, department manager.



SAS/CPE for Open Systems shows network performance and problems at a glance

"NT's performance running SAS has been exceptional, but its performance running everything else has been marginal."

Crawford said SAS may succeed under NT because in many cases the SAS software bypasses the operating system, making direct calls to the hardware. Merrill Lynch evaluated SAS running under MS-DOS with Windows, NT and OS/2 on 486-based PCs and found it ran fastest on NT.

Other items in the new SAS release include:

- Beta versions of SAS/Image, for image processing, and SAS/GIS, for processing of spatially related data.

- Unix, Windows and NT versions of several mainframe products: SAS/EIS for building executive information systems, the SAS/Calc spreadsheet package, SAS/PH-Clinical for the pharmaceutical industry and SAS/Lab for guided data analysis.

Alliance pursues standardized Ethernet

By Stephen P. Klett Jr.

A coalition of networking vendors led by Grand Junction Networks, Inc. last week aired a specification that will provide users with interoperable products for 100M bit/sec. Ethernet networks.

The goal of the specification, called 100Base-X, is to allow vendors to independently develop interoperable Fast Ethernet (100M bit/sec.) products running over two pairs of Category 5 unshielded twisted-

pair, shielded twisted-pair and fiber-optic wiring.

100Base-X was pioneered by Grand Junction and jointly developed with members of the Fast Ethernet Alliance, which includes 3Com Corp., David Systems, Inc., Intel Corp., LAN Media, Lannet Data Communications, National Semiconductor Corp., SynOptics Communications, Inc. and Sun Microsystems, Inc. The alliance plans to submit the 100Base-X specification to the IEEE 802.3 committee in November for standards consideration.

While industry observers agreed 100Base-X was a step in the right direction, they said standardized Fast Ethernet products were probably still at least three years away from reality.

This specification is "not a big step or a baby step, but it is a step forward," said Paul Nikolich, a member of the IEEE Ethernet standards committee. "Everyone still has to more or less agree to utilize a participation," he said.

Alliance, page 53

PC, SQL databases square off

Users debate on best client/server system to deploy when downsizing

By Michael Vizard

LAKE BUENA VISTA, FLA.

The debate over how to choose the right database to deploy when downsizing was in full swing at Microsoft Corp.'s recent FoxPro developers conference here as proponents of PC database systems squared off against supporters of SQL databases.

According to backers of networked PC database systems, information systems managers are promoting a vision of downsizing and client/server computing that requires the adoption of SQL databases at the expense of lower-cost PC databases that provide equal or better performance.

"It's a very hard sell to go into an IS organization. That's why you have to go in at the departmental level," said George Goley IV, president of Micro Endeavors, Inc., a consultancy in Upper Darby, Pa.

For example, Goley deployed FoxPro at the U.S. Bankruptcy Court of Los Angeles even though the national IS organization for the bankruptcy system favors SQL databases.

"The way to compete is to put a rapid

prototyping model in front of management instead of fighting over a 600-page system specification. Don't try to compete with the big iron guys in obfuscation," Goley said.

Cost not enough

But it is doubtful that the lower cost of networked PC databases and their solid performance numbers, which Goley said can match SQL databases by supporting as many as 600 transactions per second across millions of records, will turn the tide away from SQL databases.

"The architecture of a DBMS product prevents it from being considered by IS. A traditional DBMS is not going to give you the performance you'd expect to see, and the IS community has come to appreciate the support tools provided in SQL server databases," said Todd Spencer, president of the Great Lakes SQL Server Users Group in Chicago.

Specifically, Spencer said that administrative tools, security, backup-and-recovery capabilities, support for transactions and network performance all favor SQL databases. As such, Spencer said that while products such as FoxPro make excellent front-end query tools for SQL

databases, they are not capable of providing the performance of and tools available in a SQL database.

FoxPro users said Spencer is misguided.

"I'd match the performance of FoxPro against any other database on comparable hardware any day. And while it's true that FoxPro doesn't come with the tools that a SQL database has, they can either be bought as add-ons or programmed in," said Menachem Bazian, a senior associate at Flash Creative Management, Inc., a consultancy in River Edge, N.J.

To illustrate, Goley cited a distributed tanker-tracking application he built with FoxPro for Mobil Oil Corp. that tracks 60 vessels all around the world. Goley said he is able to take advantage of FoxPro's local buffer capabilities and efficient use of network bandwidth to keep multiple servers running FoxPro in sync with one another.

This approach, he said, is significantly more efficient than the distributed update and replication facilities in a SQL database.

"This application was built right after the Exxon Valdez incident, so it has a full audit trail. Originally it was built around a 3090 mainframe and a VAX, but the

users sent it back," he said, adding that he delivered that application running on FoxPro for 10% of the cost Mobil incurred to build the same application on the mainframe.

Addressing the front

To get the ear of IS management in large organizations, Goley suggested that developers initially position products such as FoxPro as front-end prototypes for SQL databases that will be deployed at a later date.

"So the magic word is prototype to get by the first-line issues. Then they'll discover you don't need a SQL database," he said.

Bazian said that while network database management systems may not eliminate the need for SQL server databases, they will dramatically reduce the number of SQL databases in an organization.

COMPANY	ADD1	CITY	TEL	HOURS
1 Macy's	Clifton Center, Wolf Rd.	Albany	555-3865	M,T,W 10-6; Th-Fr 10-9
2 Audio Lab	298 Congress St.	Troy	555-2860	M,T,W 10-6; Th-Fr 10-9
3 Radio Shack	110 Watervliet Ave.	Watervliet	555-1125	M,T,W 10-6; Th-Fr 10-9
4 Lechmere	89 Federal Way	Albany	555-7927	M,T,W 10-6; Th-Fr 10-9
5 Dalton's Audio	310 State Street	Albany	555-4500	M,T,W 10-6; Th-Fr 10-9
6 K-Mart	80 Washington St	Rensselaer	555-5091	M,T,W 10-6; Th-Fr 10-9
7 Hippo's	1500 Central Ave.	Albany	555-5538	M,T,W 10-6; Th-Fr 10-9
8 B.J.'s Wholesale	97 Third St	East Greenbush	555-1519	M,T,W 10-6; Th-Fr 10-9
9 Elmer's	Village Plaza, Rt. 146	Schenectady	555-9047	M,T,W 10-6; Th-Fr 10-9
10 Ernest's Stereo	76 O'Brien Way	Loudonville	555-4230	M,T,W 10-6; Th-Fr 10-9
11 Caldor's	1423 Heath St.	Albany	555-1987	M,T,W 10-6; Th-Fr 10-9
12 Coco's	Northern Plaza, Rt. 152	Albany	555-2921	M,T,W 10-6; Th-Fr 10-9
13 Belton Stereos	150 State Street	Troy	555-1473	M,T,W 10-6; Th-Fr 10-9
14 Concord Audio	1999 Railroad Ave.	Albany	555-0200	M,T,W 10-6; Th-Fr 10-9
15 Radio Shack	872 Johnson St	Watervliet	555-0711	M,T,W 10-6; Th-Fr 10-9
16 K-Mart	89 Albany Street	Albany	555-2205	M,T,W 10-6; Th-Fr 10-9
17 Hippo's	45 Wadsworth Circle	Menands	555-6099	M,T,W 10-6; Th-Fr 10-9
18 Sam's Club	870 Central Ave.	Albany	555-3155	M,T,W 10-6; Th-Fr 10-9
19 Audio Lab II	1145 Lawler Ave.	Albany	555-8049	M,T,W 10-6; Th-Fr 10-9
20 Wilton Stereo	189 Central Ave	Albany	555-4995	M,T,W 10-6; Th-Fr 10-9
21 Caldor's	45 Branch St	Colonie	555-8606	M,T,W 10-6; Th-Fr 10-9
22 Rettig's Stereo	2764 Consort Rd.	Schenectady	555-8424	M,T,W 10-6; Th-Fr 10-9
23 Homer's	619 Crusty Way	Loudonville	555-1965	M,T,W 10-6; Th-Fr 10-9

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Alliance

CONTINUED FROM PAGE 51

ular architecture, which will take a long time. However, it does help the [alliance] to have an implementation out there to help guide their standardization effort."

A key benefit that 100Base-X offers users is that it is based on Ethernet's media access control method — called carrier-sense multiple access with collision detection — which means customers can migrate to Fast Ethernet technology without any special training. A vendor coalition, led by Hewlett-Packard Co. and AT&T, is proposing a Fast Ethernet standard based on a new media access control method called demand priority, which would require training and additional cabling [CW, Jan. 11, 1993].

Cabling concerns

The downside to 100Base-X is that it works only with the more expensive, higher-grade Category 5 cabling and not with Category 3, which most users already have in place. The HP strategy, on the other hand, supports Category 3.

This is a major point of contention for Delmarva Power & Light Co. in Newark, Del. "Considering the fact that most of our facility is Category 3 and the high cost of rewiring, Category 5 is not an op-

tion for us," said John Scoggin, supervisor of network operations at the power company. Scoggin said he does not see the need for Fast Ethernet on the desktop until at least 1996. However, if he had to make the transition sooner, he said he would probably go with the HP/AT&T strategy because it would preserve the company's wiring investment.

According to Jack Moses, vice president of marketing at Grand Junction, the alliance plans to support additional media, including Category 3, and users can expect to see more specifications published later this year.

The Grand Junction and HP/AT&T camps have been butting heads for more than a year, and it remains to be seen which strategy will come out on top. "The only hope either vendor has is selling a common adapter at a 20% incremental cost over 10Base-T that has the option to switch to a higher speed," said Paul Callahan, senior analyst of network service at Forrester Research, Inc. in Cambridge, Mass.

In the meantime, Nikolich said there is a good chance the IEEE will adopt both Grand Junction and HP/AT&T's proposals as standards. "The process of ironing out an interoperability standard is very confusing and time-consuming," he said. "The IEEE may decide to adopt both and

leave it up to the market to pick a winner."

Callahan said this was a viable solution to weaning out a standard but added that both technologies face a small market and the scenario would take several years to play out.

On the fence

The prospect of two standards does not appeal to Scoggin. "Someone's going to end up buying the Betamax and someone's going to buy the VHS, which is a very scary scenario for network managers," he said. "If I spend a lot of money on a new technology, I need to know it will last at least five years."

Until one overall standard emerges, users appear hesitant to seriously consider either Fast Ethernet technology in their LAN migration plans.

"If we decide to go to a higher-speed topology, we'll probably look at CDDI instead because it's been around longer," said Jim Queen, director of enterprise networking at Enron Gas Services Corp. in Houston. Queen said that if Fast Ethernet takes off and the prices drop, Enron would look at it more closely. "However, we absolutely would not implement [Fast Ethernet] unless it did become a standard," he added.



Briefs

VAX-to-Unix port

Promis Systems Corp. in Toronto, a 25-year-old provider of manufacturing software, is porting its applications from Digital Equipment Corp. VAX systems to Hewlett-Packard Co. HP 9000 Unix servers. Beta versions will be available around mid-1994.

Software driver support

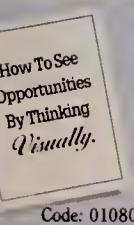
Disk drive manufacturer Micropolis Corp. in Chatsworth, Calif., added support for Novell, Inc.'s System Fault Tolerance Level III (SFT III) to the software drivers for its Raidion LT and Raidion LS fault-tolerant disk arrays. SFT III provides NetWare networks with the ability to back up data on a redundant server. Raidware, the software driver that provides the SFT III support, will ship next month for \$99. The company also announced a high-capacity version of Raidion LT for OS/2, LAN Server and NetWare 3.1x and 4.x that provides up to 54Gbytes of storage. The array is slated to ship this month. Prices start at \$8,455.

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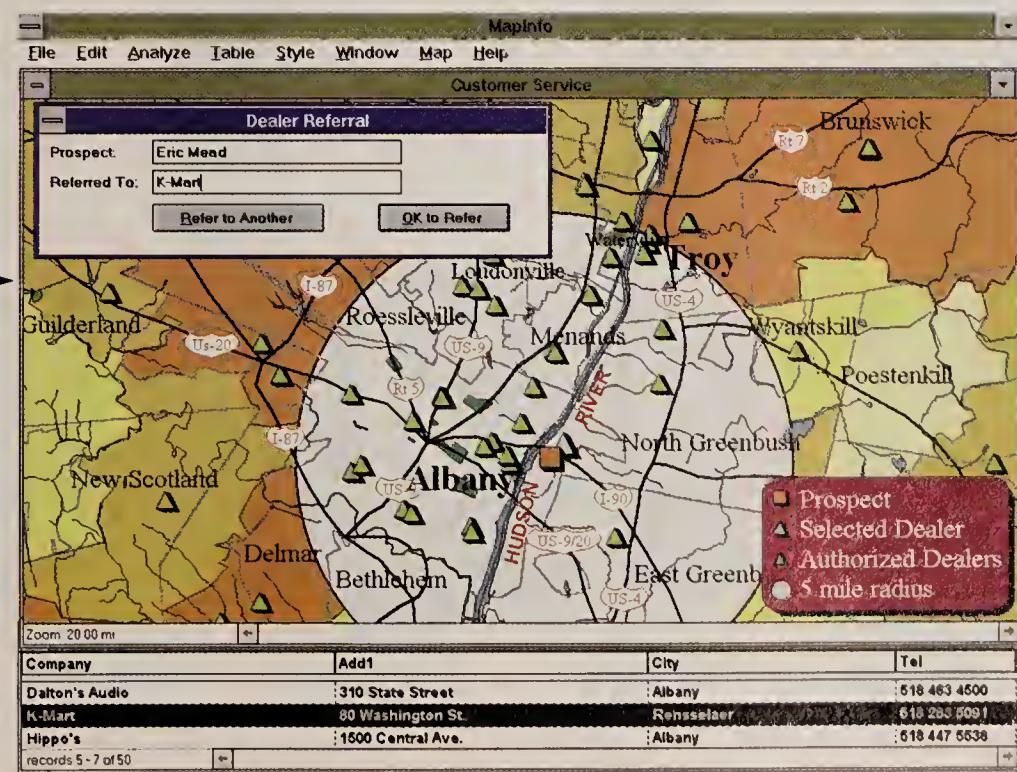
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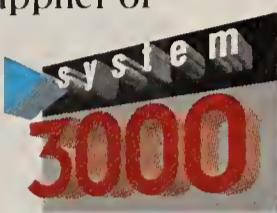
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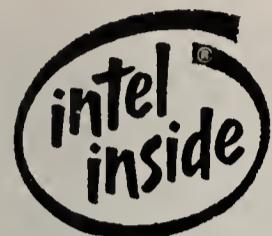
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Wang postpones work-flow offering

By Craig Stedman

Wang Laboratories, Inc., which is trying to find a new identity as a software and services vendor, recently said it has postponed commercial shipments of a promised work-flow product to early 1994 in order to build more functionality into the initial release.

Andre Boisvert, Wang's vice president of imaging and work-flow product marketing, said the Open/workflow software is now due out in the first half of 1994, instead of this year. The delivery schedule "will depend on the feedback we get"

from beta testing that is scheduled to start this month, he noted.

Chris Martins, Open/workflow marketing manager, narrowed the timeframe by saying he expects the software to ship by the end of the first quarter. Martins and Boisvert said the product was held back after it was shown to industry analysts and they recommended that

additional features be included.

Wang plans to provide more hooks than initially planned for integrating Open/workflow with business and imaging applications, Martins said. It also will now support generation of management reports out of the box, instead of just supplying a tool kit for developing that capability, he indicated.

Fine-tuning

Tom Koulopoulos, president of Delphi Consulting Group, Inc. in Boston and one of the analysts Wang brought in, said Open/workflow's icon-based development environment has been ready to ship for at least six months. But he added that the product's end-user interface is "a bit more primitive."

According to Bruce Silver, a vice presi-

dent at BIS Strategic Decisions in Norwell, Mass., who also consulted with Wang, the changes needed in Open/workflow are more of "a fine-tuning than a total overhaul. It's just missing some details that would make people stand up and notice it."

Stephen Jung, director of corporate computer services at Fleishman-Hillard,

Ine., a St. Louis public relations firm that uses Wang's VS computers, said the Open/workflow delay would not make him shy away from Wang in the wake of the firm's bankruptcy restructuring.

"It would be better for them to wait and ship something that's good," he said.

While noting that revenue could be hurt somewhat, Silver said the change in

schedule was a wise move given the status of Open/workflow and Wang's need to rebuild credibility with users. "Wang's got one chance to get it right, so whatever they put out better be good," he said.

However, Ajit Kapoor, a principal at Intelligent Solutions, Inc., a Marshfield, Mass., consultancy, said the delay "is not good news" because Open/workflow is central to Wang's software strategy. "Coming on the heels of Chapter 11, this is the last thing anyone wants to hear."

Shipping shape

Open/profound, Wang's document management package, is in beta testing and should begin limited shipments on IBM's RS/6000 systems this month, said Andre Boisvert, Wang's vice president of imaging and work-flow product marketing. It is scheduled to become available on Hewlett-Packard Co.'s HP 9000 hardware 30 to 45 days later. It will become generally available during the first quarter of 1994.

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According to Bruce Silver, a vice presi-

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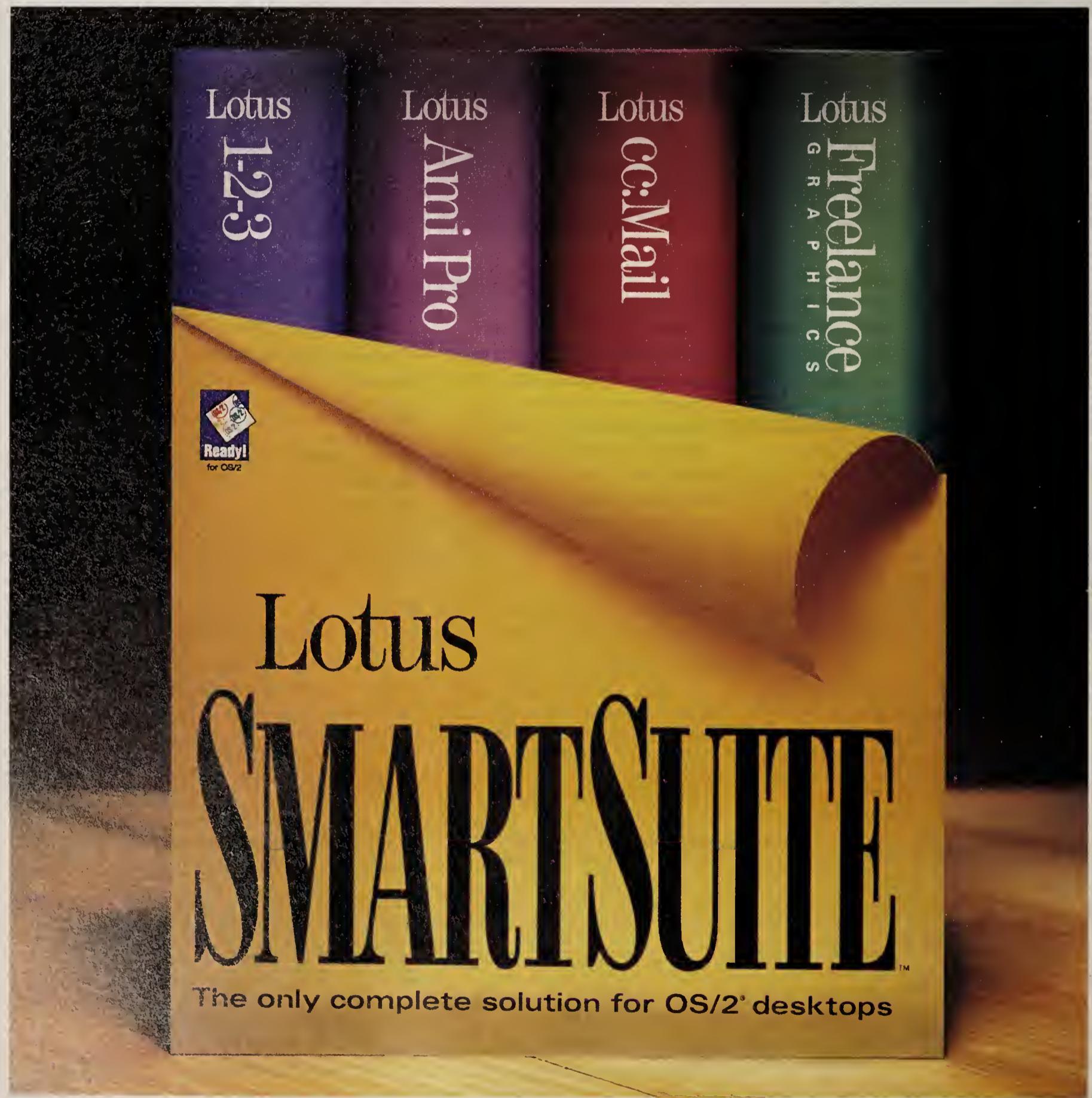
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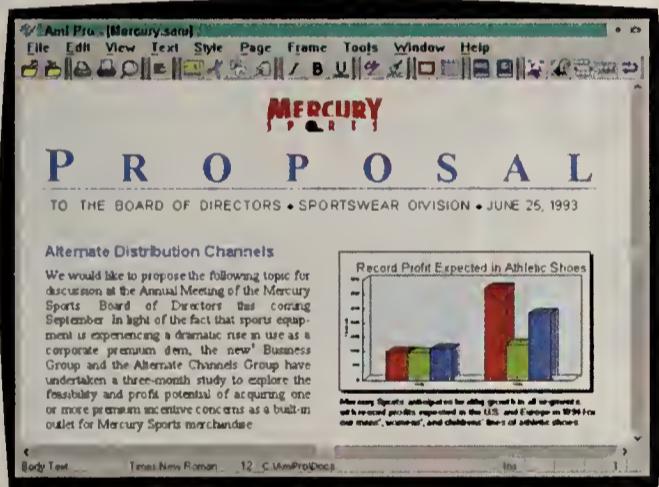


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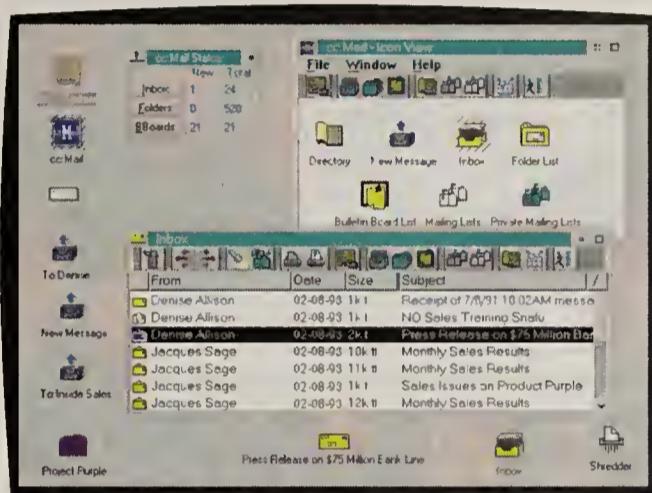
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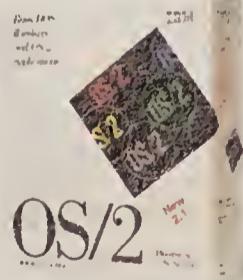
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Wireless device links PCs, peripherals

By Stephen P. Klett Jr.

Start-up Radiance Communications, Inc. has unveiled a wireless communications device designed to allow up to 15 non-networked PCs to share a peripheral device such as a printer or plotter without the hassles and expense associated with cabling.

LightShare-16 is a spread-spectrum, plug-and-play infrared transmitter/receiver that connects to the parallel port of the PC or printer. According to the company, the \$200 device has a maximum communication distance of 36 ft. at a data throughput rate of 250K bit/sec.

User-definable group and individual addresses enable up to eight workgroups to share the same office space without interfering with one another's communications.

Mobile connection en route

Radiance plans to ship a PCMCIA interface by the end of the year that will allow users to plug LightShare-16 into portable PCs, according to Youngsoo Ryu, president and chief executive officer of the Santa Clara, Calif., company.

While Jennifer Pigg, a networking analyst at The Yankee Group in Boston, said LightShare was an intriguing technology, she was unsure of its practicality.

"The utility of such a device is marginal," Pigg said. "It's another option for users — wiring users to printers is expensive and time-consuming, but it's a niche market at best." The Yankee Group projects wireless LAN revenue will grow from \$48 million this year to \$237 million in 1996.

Low cost a boon

However, Pigg pointed to LightShare-16's low price point and forthcoming PCMCIA interface as options that may combine to generate user enthusiasm.

This is already the case at Federal Express Corp. in Memphis, according to Robin Richardson, business application adviser of business logistics services.

Richardson said the addition of the PCMCIA interface may spur FedEx to move LightShare-16 from the laboratory to live applications within a year.

FedEx has been testing the product since August. Richardson said he likes its reliability and low cost. "It's kind of like the Mac — ev-

erything's so simple," he said. "It installed in minutes.... If [infrared] replaces the functionality of [radio frequency], which I expect it will, we'll be able to realize considerable cost savings."

According to Radiance, spread-spectrum infrared technology offers a significant security advantage over conventional radio wave technology. Infrared signals are confined to the room in which the transmitters are located, while radio wave signals are not. Ryu said this means the infrared signals cannot be monitored outside the building, and they will not interfere with communications in nearby buildings.

Richardson, meanwhile, said he is excited about the potential of wireless infrared technology.

"I really think that if radio communications supports this technology and we start to see support for routers and hubs, it will be so much easier to install a card to set up a LAN, rather than dealing with wiring," he said.

LightShare-16

In a typical configuration, the LightShare-16 transceivers are aimed at a common spot on the ceiling to reflect and diffuse the infrared signals between devices at distances of up to 36 ft. According to Radiance, a 100-ft. range is possible using line-of-sight signals, allowing LightShare-16 to connect PCs and peripherals in semiopen areas (where partitions do not reach ceilings) of up to 5,000 sq. ft.

Pricing froze DEC workstations

Digital Equipment Corp. executives have confirmed that the company held off introducing low-end Alpha AXP workstations as part of its Oct. 12 product introduction after IBM and Hewlett-Packard Co. stayed well above the \$5,000 mark in recent workstation rollouts.

"We were sort of watching the market and saying that if we had to, we could rush one out," said Andy Feit, Unix workstation marketing manager at Digital. "But we didn't feel the need to do anything now."

Sources indicated that Digital was ready to add 300LX and 300X models to its DEC 3000 workstation line if necessary [CW, Oct. 4].

The company instead limited itself to the higher-end DEC 3000 models 600 and 800. The low-end boxes are now expected to debut in early 1994.

Despite the addition of the Alpha AXP line, Feit and other Digital officials acknowledged that the company has not yet started to gain back the workstation market share that it has lost in recent years. "But certainly we would expect now that this will begin to happen," said William Demmer, vice president of Digital's computer systems group.

The Alpha machines were held back by a lack of applications but are supported by "an adequate number" at this point, Demmer added.

— Craig Stedman

New Products

Telephony Services Group, Inc. has introduced Telephony Messaging Services, an offering that provides intelligent call management services to users of Banyan Systems, Inc.'s Vines networks or Novell, Inc. networks furnished with Banyan's Enterprise Network System.

According to the Old Brookville, N.Y., company, Telephony Messaging Services provides PC networks with the telephony capabilities of IBM's CallPath Services or Integrated Services Digital Network.

The product creates a seamlessly integrated telephony and network environment for PC users.

Prices range from \$500 to \$600 per seat.

► *Telephony Services Group
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TechKnowlogy has introduced Version 2.1 of the Jukebox Management Software.

According to the Salt Lake City company, the software eliminates bottlenecks in imaging system performance frequently caused by jukeboxes, multifunctional drives and robotic devices that load optical disc platters into write-once read-many.

It allows a jukebox to process more than 60 requests per minute.

The software offers an intelligent caching system and retrieves document images 22 times faster from magnetic disk than from optical disc.

A key feature is the ability to support a variable-sized magnetic cache.

Version 2.1 supports more than 55 industry-standard jukebox models.

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Hitachi America Ltd. has introduced two high-performance storage subsystems, HitCache and HitRAID.

The HitCache caching disk subsystem offers storage capacities of 5.7G bytes to 11.4G bytes. It is a fully integrated system.

According to the Brisbane, Calif., company, HitCache's overall read/write response time is an average of 200% faster than typical component-based systems.

Based on Intel Corp.'s 960CA RISC processor, the subsystem controller has a 32-bit wide, 50M byte/sec. internal bus to eliminate throughput performance bottlenecks and a serial port for field diagnostics and maintenance.

The HitRAID high-performance disk array is available in minitower and cabinet versions; it offers capacities ranging from 5.6G bytes to 68.8G bytes.

The subsystem can achieve an 80 million mean time between data loss specification. It implements either redundant arrays of inexpensive disks (RAID) Level 3 or RAID Level 5 functionality.

HitCache prices begin at \$29,800 for the 5.7G-byte model.

On a cost per megabyte basis, evaluation pricing for HitRAID subsystems ranges from \$2.20 (for high-capacity models) to \$5.32 in lower capacities.

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What makes Wall Street touch with the latest dynamics currencies, commodities strange things most of





savvy enough to always be in
of companies,
and all those
us don't understand?



PCs, workstations and midrange computers, linked to

Mainframes, what else?

To describe a brokerage as an information-intensive business is a bit of an understatement. Like certain other industries, the information *is* the business.

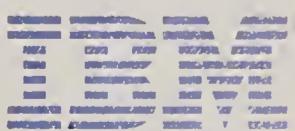
That's why they rely so heavily on mainframes to serve the rest of their computer network.

By being linked to a mainframe, every desktop PC and workstation has access to vast amounts of information, everything from customer portfolios to emerging company research.

And since for businesses like this, time literally is money, companies have come to depend on mainframes to give them access to that information instantaneously. 24 hours a day, 7 days a week.

The fact is, no matter what your business, if it depends on information, nothing can "serve" the rest of your computer network "clients" to nearly the degree a mainframe can. And the new "openness" of mainframes allows them to serve just about any kind of hardware and software.

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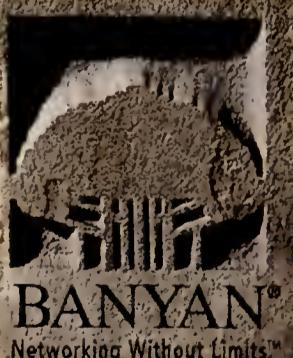
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LANs strike differing DCE relationships

Systems vendors choose 'best of breed' for servers, clients

By Joanie M. Wexler
ROSEMONT, ILL.

IBM recently reiterated its plan to blend the Open Software Foundation's (OSF) Distributed Computing Environment (DCE) services into the next version of its LAN Server network, fueling the question of what role today's network operating systems will play in the DCE world.

DCE is a fledgling set of peer-to-peer computing services from various vendors that have

been integrated by the OSF to allow application and communications portability across disparate systems.

Some network operating systems vendors consider it strategic to incorporate what they deem "best of breed" DCE global directory services, time synchronization, file services, security and other features across their servers and clients.

For example, Bill Conklin, technical program manager at the IBM Personal Software Products group, expressed this view to attendees at a Corporate Association for Microcomputer Professionals (CAMP) meeting here last month, reminding them that the next version of LAN Server, due in the second half of 1994, would incorporate all DCE services.

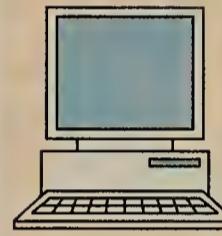
LAN Server's support of the global directory service holds appeal for Ric Rothschild, a distributed data processing manager at Kemper National Insurance Cos. in Long Grove, Ill., and a CAMP attendee.

"I want to know how and when X.500 will be supported so I don't have to keep up with domain administration," he said.

The current version of LAN Server, Version 3.0, breaks into domains of up to 1,016 users each.



JOANIE M. WEXLER
IBM's Bill Conklin pushed the next version of LAN Server for its DCE qualities



AIX on the way

IBM's Bill Conklin told the CAMP group that LAN Server for IBM's AIX flavor of Unix, which runs on the RS/6000 platform, would ship in the next nine to 18 months.

With X.500 support, domains could extend to cities, states or worldwide enterprises, Conklin explained.

Banyan Systems, Inc.'s Vines is also slated to support the full DCE bundle by an unspecified date, Banyan said, but Novell, Inc.'s NetWare and Microsoft Corp.'s Windows NT have less definitive relationships to DCE.

NetWare/DCE link

Conklin asserted that "NetWare doesn't really play in the OSF environment." Indeed, Novell's market-dominating NetWare is slated to link to DCE but will likely integrate just a small subset of its services into its servers, Novell said. This means unsupported services would probably not translate across environments without performance-throttling gateways.

Michael DeFazio, Novell's Unix Systems Group vice president, said at Unix Expo in September that "DCE is not in high demand; as it evolves, we'll support it in NetWare and UnixWare, mostly through third parties."

For example, Novell is working with Carnegie Mellon University to build a NetWare gateway that maps NetWare drives into a DCE distributed file system, said Bob Davis, vice president of marketing at the Unix Systems Group.

"There are services we would look to put directly into NetWare, like [remote procedure calls], in partnership with third parties. But this would be driven by customer demand," Davis said.

Microsoft has said it will support DCE with LANs and DCE, page 66

If P, then Q

The role of NetWare and other network operating systems in organizations using DCE will vary depending on user implementation plans. For example:

IF

YOU WANT TO KEEP NETWARE BUT INSTALL SOME DCE APPLICATIONS

THEN

Maintain two separate environments if no data sharing; if applications are sharing data, NetWare file server will need a gateway to DCE file services.

YOU WANT TO INSTALL DCE FOR PEER COMPUTING ONLY

Get applications that support DCE remote procedure calls only; use NetWare for other functions. Do not use software that uses DCE file services, or you will need a NetWare-to-DCE gateway.

YOU WANT TO USE DCE FOR ACCESS TO ALL DISTRIBUTED COMPUTING SERVICES

Dump your network operating system, NetWare or otherwise.

Source: CIMI Corp., Voorhees, N.J.

Client/server

Single sign-on nears OK

By Elisabeth Horwitt
BOSTON

A team of determined corporate users and leading vendors can make real progress toward addressing the more stubborn aspects of multivendor client/server computing, as shown by work at the recent Open User Recommended Solutions (OURS) meeting here. One top priority work item: coming up with consistent user sign-on protocols for better security management.

The vendor contingent seemed almost as excited as the users about the results of the meeting. "OURS provides to vendors a setting where a number of users debate and synthesize and, in the end, document sets of requirements for interoperability issues,"

Single sign-on, page 66

Building IS from the ground up

By Joanie M. Wexler
CHICAGO

The wielding of technology as a competitive weapon has been discovered by the trade show industry, where exposition centers are growing bigger and network-ready to woo high-paying exhibitors.

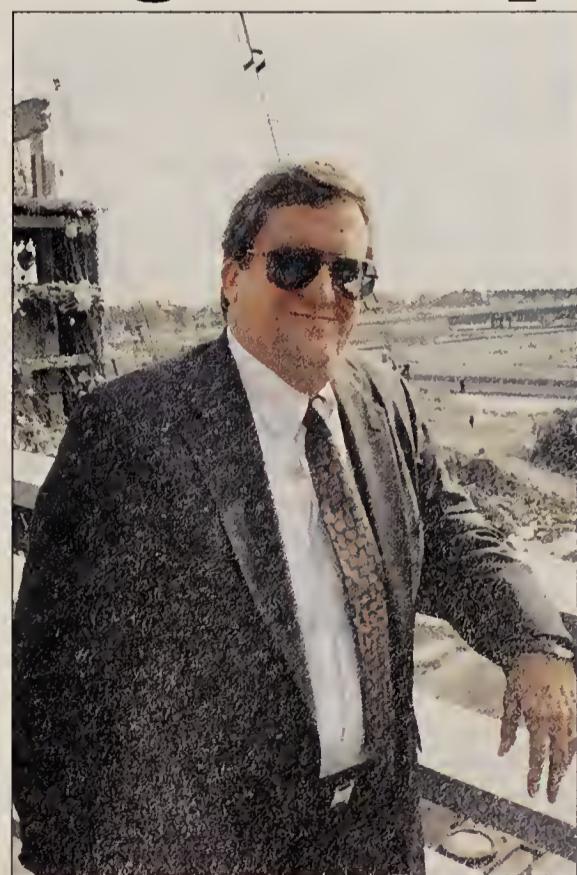
Witness, for example, an in-progress revamp at the revered McCormick Place exhibition hall here, where three years ago "there was simply no IS at all," said Bernard J. Dudek, director of management information services.

Since then, however, the center has expanded to 260 LAN-connected PCs spanning four buildings. They serve internal users.

But an internal infrastructure is only the beginning: The center — administered by the Metropolitan Pier and Exposition Authority (MPEA) — is now looking to market data services to exhibitors. To that end, it has begun ripping down walls, expanding skyward and outfitting itself with the latest in data delivery technology such as fiber cabling and high-end wiring hubs.

One goal is to attract the big, data-intensive exhibitors, such as the Radiological Society of North America (RSNA), which will exhibit at McCormick Place late this month. Built-in networking — especially fiber facilities — is important to the RSNA because this year will be the first time it networks its exhibitors on the show floor, said Steven T. Drew, director of informatics at the RSNA in Oak Brook, Ill.

Building IS, page 70



JOANIE M. WEXLER
McCormick Place's Kent Worrell: Looking to conserve dollars and shoe leather by consolidating resources

ON SITE

Metropolitan Pier and Exposition Authority Chicago

Goal: To create a large, network-ready convention center that attracts foreign and domestic exhibitors.

Technology: Fiber-optic cabling, potential high-end "collapsed backbone" hubs and routers, AS/400 host and Idea controllers.

Benefits: Infrastructure that allows network-oriented exhibitors to exchange data and images on show floor.

Single sign-on

CONTINUED FROM PAGE 65

said John Worthen, president and chief executive officer at Mergent International, Inc., a security software firm in Rocky Hill, Conn.

At the meeting, the OURS data security task force reported good progress in getting key vendors to provide standardized user sign-in

OURS task forces and their charters

WHAT WORKS WITH WHAT

Improve interoperability among multivendor platforms and products.

NETWORK MANAGEMENT

Define user requirements for network and systems management and feed to vendors.

SOFTWARE LICENSING

Raise awareness among users and vendors that alternative software licensing models exist and are based on methods of value pricing.

MULTIVENDOR EDUCATION

Provide a vendor-independent skills road map for IS managers to succeed in client/server environments.

DATA SECURITY

Identify single sign-on alternative and products that address operational problems in multivendor, multiple-location computer environments.

procedures across a variety of network, server and workstation environments. This is a major issue, particularly for financial services firms that want to administer security across heterogeneous client/server networks, said Stash Jarocki, vice president and director in corporate audit at Citibank NA and a co-chairman of the task force. "That's the real killer."

Cooperation works

The meeting was "the most exciting we've had so far" because so many powerful users and vendors were working together to define a cohesive set of requirements for single sign-on across different platforms, Jarocki said. For example, the group concluded that it had to come up with a methodology, such as key-based password, to ensure that the sign-on procedure itself is secured, he added.

"And we brought up the question of how you traverse from one system to another, [for example] if I'm on Novell and I want to talk to HP or IBM, how to put me on the network with a security server."

The answer the group is now formulating with the help of key vendors is a standardized security application programming interface that all of the important products would ideally support. The result would be a standardized way for a server or gateway to translate the passwords created on one system into the format understood by another, Jarocki said.

The big advantage that this task force provides over typical standards bodies is that it seems to be getting out real, commercially viable solutions to real problems in a short time frame, Worthen said. "It's easy to sit down with your competitors and talk about what the world will be like in five years; [it's] different when you are talking about deliverables in a few months. OURS is about that."

The task force began by "assessing what technology is available today" and developing a matrix of user security needs, Worthen said. It then identified vendors that provide parts of that matrix and began "nudging vendors" to enhance their products to fill in the outstanding gaps in the matrix. Its latest move has been for the user members to address "the vendors in the room, saying, 'Hey, you have a good Unix product; you have a good SNA product. Why not talk to each other?' It's a great breeding ground for cooperation," Worthen said.

For example, Mergent is now cooperating with rival ICL to provide a broader solution set to customers, Worthen said. Mergent specializes in security products for DOS, OS/2, Windows and Novell, Inc. platforms; ICL, in Unix and dumb IBM terminals.

The group is working on a brochure to help vendors implement standardized security, Jarocki said. "The vendors will listen to us," he said, partly because key vendors, such as Novell, attended the meeting and primarily because the task force includes such heavy-hitting customers as American Airlines, Citibank, American Express Co., The Chase Manhattan Bank NA and Chemical Banking Corp.

Mergent initially got involved in the security task force at the urging of some of its major customers, Worthen said.

The group hopes to complete initial objectives for a single sign-on standard in the first half of next year, Worthen said.

On the group's agenda for the OURS meeting in April 1994 is coming up with a standardized way for network management platforms to manage security implementations across heterogeneous networks. The group will work in tandem with the OURS network management task force to ensure that the two groups do not wind up with divergent solutions to overlapping problems, Jarocki said.

Maxm automates management

By Lynda Radosevich

Maxm Systems Corp. in Vienna, Va., recently added increased automation capabilities to its network management integration software.

The Maxm software integrates network management systems from mainframes, mid-range, wide-area network, LAN and voice platforms. This distinguishes Maxm from leading network management vendors that focus on providing software to manage a limited range of systems, according to company president Jack Reis.

The integration software allows users to manage all computing and communications devices from one workstation and add automation routines that cut down on the amount of network manager intervention. In turn, that allows customers to reduce their network management head count by 50%, Reis said.

"That's possible," said Jeremy Frank, vice president of networked systems management service at Gartner Group, Inc. in Stamford, Conn. The ability to deploy client/server systems is well ahead of the ability to manage it, Frank said: "60% to 80% of all new client/server deployments fail to deliver on their promises, mostly because they aren't managed well."

Maxm offers a tactical approach to integrating management of physical networking devices. Strategic solutions that also manage applications are still three to four years down the road, Frank said.

The Maxm software picks up data streams from the managed devices, interprets the protocol (such as Simple Network Management Protocol and Common Management Information Protocol), and translates the information into a standard format. The software can then filter out information that does not require any action, such as messages indicating that a device is alive and well. It can also store information for reports and invoke automatic routines, such as resetting a device.

New features

The latest release adds IBM's Rexx scripting language to both the client and server Maxm portions. Rexx allows network managers to write automation routines that can automatically initiate actions via IBM's NetView family of network management systems. Maxm interacts with NetView, thereby saving on network operator intervention.

Also, the new release increases the level of operator authorization, so users can specify a high-level operator that only receives high-level problems, for example.

Maxm is a privately held company with approximately 70 employees. One of the company's strengths is that IBM picked Maxm as a strategic business partner, Frank said. Other competitors in this niche market include Boole and Babbage, Inc. in Sunnyvale, Calif., Objective Systems Integrators in Folsom, Calif., and Nynex Allink Co. in White Plains, N.Y.

Network General extends LAN analysis

By Elisabeth Horwitt

Network General Corp.'s Distributed Sniffer System can now monitor and diagnose traffic across multiple Ethernet segments that are attached to Alantec's PowerHub line of intelligent hubs, the two vendors announced last week.

The Sniffer, or any LAN analyzer for that matter, can monitor any Ethernet segment attached to an Alantec PowerHub by working with Alantec's Port Monitoring feature, the San Jose, Calif., hub vendor said.

Port Monitoring dedicates one of 12 Ethernet segments on the hub for receiving traffic from all other segments; the traffic is then collected for analysis by a Distributed Sniffer Server.

PowerHub can also collect Fiber Distributed Data Interface frames for viewing by Sniffer, an Alantec spokesman said.

This allows users to monitor multiple LAN segments from one Sniffer console, without the need to move a portable Sniffer from one segment to the next or install a Sniffer Server at each segment, the vendors said.

The Distributed Sniffer Server is priced at \$7,495. Also required is a Sniffer console, priced at \$4,995, Network General said.

PowerHubs are priced at \$9,950 to \$27,950, with the Port Monitoring feature thrown in, Alantec said.

Network General already has an alliance with 3Com Corp. to monitor 3Com hubs via Sniffer and the Remote Monitoring standard. Other alliances are in the works, a Network General spokesman said.

LANs and DCE

CONTINUED FROM PAGE 65

its Windows NT-based distributed architecture, Cairo. Also with a charter to support Unix, Posix and DOS shells, "NT will support DCE by matter of course," said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy.

Meanwhile, IBM's LAN Server can share resources with NetWare through loading LAN Server Requester and NetWare Requester on the same OS/2 machine and allowing different device drivers to give the user access to either platform.

But in the DCE world, users "might have to separately log on to NetWare, NT and the DCE network," Conklin said. This would run contrary to the concept of DCE, which is to coat over heterogeneous systems with common interfaces to create one look and feel for the user.

Users' choice

However, depending on how well DCE flies and what users decide to do with their existing LAN applications, this might not be a big deal, Nolle said. Some companies, for example, might keep their NetWare and DCE environments separate.

Conklin said he is "not sure" yet whether the DCE services in Version 4.0 will be embedded in the IBM OS/2 operating system, off of which LAN Server runs, or in a separate application. Embedded in OS/2, it "would be more accessible for developers but would take up unnecessary resources for OS/2 users not interested in DCE," Nolle said.

If DCE were in a separate LAN Server application "then those users affected are only those who have elected to use it," he noted.

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TRAPPED IN THE BODY OF THIS TINY SERVER

This is a story about a small computer engineered to be so dependable, you won't think twice about trusting it with your mission-critical applications. And to be this without filling a closet, much less a room. If you haven't thought of Compaq as an enterprise-critical platform before, we invite you to grab your bifocals and begin. (We'll be cramming a lot of information into this ad, which, given how much we managed to fit into our new servers, only makes sense.)



If there's one thing we've learned working with our customers, it's that you're running more and more mission-critical applications on your network. And if your network goes down, your business goes down. All of which makes the introduction of the new Compaq ProLiant Server even more timely.

The ProLiant is a new family of affordable, high-performance, easy-to-manage servers engineered specifically to provide the high availability you need for mission-critical networks. We've designed ProLiant in three different models, ranging from a single-processor configuration to a four-Pentium processor model.

Now, how can you be sure our server is truly a miracle and not a mirage? To begin with, there's Full Spectrum Fault Management, provided by Compaq Insight Manager technology and software that continually monitors over 800 aspects of the server's operating status. (For example, Drive Parameter Tracking checks 15 hard-drive parameters.) All of this information is constantly gathered, analyzed and then used to prevent, tolerate or recover from system problems.



If the performance of a monitored component drops below a specified level, our unique Pre-Failure Warranty kicks in. We'll actually replace a Compaq warranted drive or memory system free. Before it stops working. No downtime. Ringing cash registers. Happy boss.*



Still, no network's perfect. In the unlikely event problems occur, our server exhibits remarkable tolerance. Every ProLiant includes Compaq-designed hot-pluggable drives. ProLiant Models 2000 and 4000 come standard with advanced error-correcting memory and off-line backup processor features (whereby the server reboots

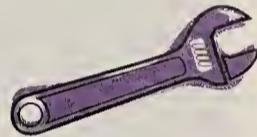
automatically to a second processor). And, most notably, the Compaq Smart SCSI Array Controller together with the ProLiant Storage System ensures mission-critical data integrity. Should a network problem bring the server down, the Rapid Recovery Systems of the ProLiant are designed to bring it back up.

EVER IS A MAINFRAME WITH AN ATTITUDE.

Netware and other major operating systems. To get hooked up to your network operating system, simply call your dealer for an access code, enter it, answer a few questions, and leave. Minutes later—say, after you've enjoyed a cup of coffee and a jelly donut—you'll return to find an integrated OS fully installed and optimized for increased performance and improved management. And we'll keep you updated via CD when new operating system versions appear.



*And finally, to accompany our new line of mission-critical servers, we're introducing mission-critical support. With ProLiant, we now offer extensive analysis, installation and service through our CompaqCare System Partners, a select group of highly trained systems experts backed by Compaq engineers. You can now choose 4-hour on-site warranty response upgrade** direct from Compaq. Again, there's our unique Pre-Failure Warranty. And, of course, all Compaq servers come with a 3-year on-site[†] warranty, and 7-day-a-week, 24-hour-a-day technical support.*



All in a surprisingly small box for not a whole lot of money. In fact, a DX2/66 Compaq ProLiant 1000 starts at about \$6000![‡]

Which may help to explain the look your boss gives you when he hears how much money you've saved: stunned admiration. But you'll get used to that. It goes with the territory. For more information on the new Compaq ProLiant servers, or for the location of an authorized Compaq reseller near you, just call us at 1-800-345-1518. If you'd like to receive model, feature and specification information immediately via fax, select the PaqFax option. Or, if you'd like that information even sooner, just turn the page.



For example, Automatic Server Recovery 2 uses a historical record of server status and performance to perform an astonishing array of tasks. Like intelligently restarting the server, automatically correcting a variety of problems, and accessing a telephone pager to contact network administrators.

By now you'd expect us to have rethought server setup, configuration and OS installation, but you might be surprised by the results. Introducing SmartStart, a CD-ROM system that takes the headache out of getting your server up and running. ProLiant includes a CD-ROM drive and bundled CDs of optimized

COMPAQ

"HE'S IN A MEETING."

"SHE ONLY DROVE IT TO CHURCH ON SUNDAYS."

Building IS

CONTINUED FROM PAGE 65

Fifty to 100 of RSNA's 600 exhibitors will exchange bandwidth-devouring applications that combine digital images with associated medical information over different vendors' radiological equipment. This will be the first demonstration of a new medical equipment networking standard, Digital Imaging and Communications in Medicine, Drew said.

Drew, who is collaborating with McCormick Place on its fiber installations in what will be the exhibition hall's first



JOANIE M. WEXLER

McCormick's Bernard Dudek: *Hopes to attract exhibitors with a network-ready convention center*

outside support project, said it is important to him that an exhibition hall have built-in fiber to circumvent the 100-meter distance limitations of unshielded copper so exhibitors in the farthest corners can join the network.

To accommodate exhibitors, McCormick Place is immersed in a four-year project that includes the construction of a five-story building housing an extra 2 million sq. ft. of exhibit and meeting space. Fiber links are slated to run within and between buildings in the 2-mile-radius complex—moves that "parallel expansion by other convention centers," Dudek said.

The project will also see McCormick Place following a network trend to collapse many communications functions into one or a few pieces of equipment in a centralized spot that looks strangely like a data center.

The cost factor

One reason this scheme is drawing interest is that it is costly to disperse servers, wiring hubs and other equipment throughout a large distributed enterprise, said Kent Worrell, information center manager at McCormick Place. He said, for example, that he is running multiple hubs, servers and copies of Novell, Inc.'s NetWare that are underused but needed because the users are too far apart to share resources.

And as a municipal entity, he indicated MPEA does not have taxpayers' money to burn.

His cure could eventually include running SynOptics Communications, Inc.'s recently announced System 5000 smart "hub of hubs" [CW, Sept. 27], which aggregates corporatewide traffic. Combined with fiber cabling, which stretches user-connection distances far beyond what copper cabling can do, the 5000 could allow Worrell to link the geographically dispersed users back to it directly.

He estimated that he could cut the price of his 37 wiring closets, some of which only feed the show floor, down

from a ballpark figure of \$50,000 to \$15,000 by not replicating servers and Wellfleet Communications, Inc. routers in every closet. A high-end, traffic-aggregating Wellfleet Backbone Node router plugged into the System 5000 could be in order, he said.

System 3000 shortcomings

Today, MPEA runs about 20 distributed SynOptics System 3000 wiring hubs "when I could probably get away with two" if matching the number of hub ports to the user body count, Worrell said.

This is an issue for many System 3000 hub users today, said Val Sribar, program director at Meta Group, Inc. in Westport, Conn. System 3000 modules contain one fiber connection on a 12-port card; users come into the hub over a fiber link and then attach to just one or two resources, such as a server, over copper.

"You end up burning a 12-port card to use just a couple ports," Sribar explained.

The System 5000 design is intended to remedy this situation. It supports more modules with a fiber link and just four copper ports so that each module is more likely to be fully used.

Software first

MPEA's applications philosophy is to buy off-the-shelf software as often as possible and let the product drive the platform, said Bernard J. Dudek, director of management information services.

He indicated that potential interoperability issues among platforms would likely be less of a headache than installing software that doesn't fit the bill.

So far, that thinking has meant installing an IBM AS/400 D50—soon to be upgraded to an F70—to run Denver-based J. D. Edwards' financial package, customized for exhibit booth-by-booth work orders. Fortunately, an AS/400-based package also administers McCormick Place's internal event management, though a Unix application was a decision finalist.

For interoperability with the AS/400, MPEA largely uses Novell's NetWare for SAA gateway to accommodate managers with PCs. "It's good for terminal emulation, but printing is a problem," said Kent Worrell, information center manager. The AS/400 "really wants" to talk to its own 5250 terminals.

So MPEA uses a controller from Idea in Billerica, Mass., to hook a remote dumb printer and a few 5250 terminals into the host, Worrell said. Idea's Concert product was one of the original products to fill this interoperability gap, though Worrell pointed out that IBM now makes a similar product.

—Joanie M. Wexler

Cellular carriers gain new fraud-detection weapon

By Ellis Booker and James Daly

Estimates put U.S. telecommunications fraud at around \$4 billion annually, with fraud on cellular networks alone accounting for between \$365 million and \$600 million each year.

Recently, however, a handful of cellular carriers have deployed knowledge-based systems to help thwart this nefarious misuse of their networks. While initially focusing on voice communications, the technologies eventually may help secure wireless data transmissions.

"None of us would ever leave a confidential memo lying on a restaurant table, but then we don't think twice about transmitting data electronically without a safeguard," said Bob Geisler, a senior consultant at CCT, Inc., a consulting company in Minneapolis.

One of the new products, FraudBuster, a workstation-based system from Coral Systems, Inc. in Longmont, Colo., watches the calling behavior of users over a period of time and can issue alerts when the calling pattern of an individual subscriber starts to appear suspicious.

FraudBuster accomplishes this with a neural network "inference engine" from Neuron Data, Inc. in Palo Alto, Calif.

Nexpert Objects is "the heart of the system," said Mark Handzel, Coral vice president of development, about Neuron Data's expert system development tool. "The [artificial intelligence] engine analyzes all the multiple levels of alerts and events and decides whether to generate a yellow or a red condition."

The true value of the artificial intelligence engine is that it winnows down possible suspects to a manageable few, Handzel said.

First customers

So far, FraudBuster has been officially deployed with a cellular carrier in Puerto Rico; it has also been installed in several large Bell company cellular networks, according to Coral.

"The approach does appear to be promising," said John J. Haugh, chairman of Telecommunications Advisers, Inc., a Portland, Ore., consultancy that specializes in preventing telecommunications fraud. "Whether it truly represents a breakthrough will depend on further testing and market acceptance."

Haugh, who estimated that cellular fraud worldwide surpasses \$1 billion per year, is heartened by the fact that cellular carriers are "finally beginning to take the problem seriously." He said the industry is now investing in hardware and software innovations that promise to get

the situation under control—at least domestically.

According to Coral, the Neuron Data inference engine in FraudBuster can build a customer-use profile in as little as two weeks—although 40 days is normally allocated to this process.

Further scrutiny

Additional security efforts are underway at PacTel Cellular in Los Angeles, which is conducting a pilot project. ESL, Inc., a subsidiary of Cleveland-based TRW, Inc., is testing an electronic system that tracks, identifies and blocks calls that people make using stolen telephone access numbers.

The TRW system determines the legitimacy of a call by comparing the unique signal frequency patterns of the device

making the call with the pattern on record for that transmission device. Although this early phase of testing for the PhonePrint system is not targeted at the mobile PC, TRW Program Director Jeff Phillips said the technology could be extended into this area.

Phillips estimated that the PhonePrint network access controller system will conclude its test with PacTel Cellular early next year, and the services will then be made available to cellular carriers nationwide.

Cellular technology is seen as the next information highway for mobile computers. Spectrum Information Technologies, Inc. in Manhasset, N.Y., for instance, offers a technology that allows portable computers to transmit data via cellular telephone networks. Such total mobility is crucial to the adoption of personal digital assistants such as Apple Computer, Inc.'s Newton, Casio, Inc.'s Z-7000 and Eo, Inc.'s 440.

The use of wireless data transmission technology has security managers worried about the potential for abuse. "To tell you the truth, it makes me a little jumpy," said Brian Redler, director of security and operations at National Securities Clearing Corp. in New York.

How safe is wireless? That depends. "Wireless technology is not inherently more dangerous than land-line networking, but you do have to play by a slightly different set of rules," said Ira Brodsky, president of Datacomm Research Co. in Wilmette, Ill.

Ultimately, wireless security awareness must be emphasized at the end-user level. Data encryption, at the very least, should be the first line of defense. "As we distribute the resources, we distribute the responsibility," said Fritz Wagner, manager of corporate electronic information security at Du Pont Co. "The IS guys can't do it all."

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New Products

CHI/COR Information Management, Inc. has announced TRPS Express, a Windows-based front end for the company's Total Recovery Planning System (TRPS), a DOS-based recovery planning tool.

According to the Chicago company, the product allows network recovery plan-

ners to take advantage of the same industry standard relational database planning format as its TRPS.

TRPS Express features an on-line recovery planning methodology that explains recovery planning concepts and principles to the network planner in common management terms.

The product also includes a network topology section, an imaging facility and action icons.

TRPS Express is available at an intro-

ductory price of \$7,995 for a single-user license.

►CHI/COR Information Management
(312) 322-0150

NetStor, Inc. has introduced automated storage management software for Hewlett-Packard Co.'s HP 9000 systems running HP/UX.

The software includes Hierarchical Storage Management (HSM) software

and optional Network (remote) Migration.

According to the Minneapolis company, the HSM software provides full-featured network storage management with automatic file migration, high-speed backup and library management.

Automatic file migration between a remote client and the HSM server is provided by Network Migration.

Prices for the HSM software start at \$7,500.

►NetStor
(612) 890-5135

Digital Communications Associates, Inc. has introduced Crosstalk for Macintosh, asynchronous communications software for the Macintosh environment.

According to the Alpharetta, Ga., company, Crosstalk for Macintosh offers a comprehensive set of terminal-emulation and file-transfer protocols.

The product offers full support of Apple Computer, Inc.'s Comm Toolbox standard for connection, file transfer and terminal tools. It also provides cross-platform compatibility to ensure script, QuickPad and keyboard files, in addition to a user interface capability between environments.

The product also includes a built-in text editor.

Crosstalk for Macintosh 2.0 costs \$195.

►Digital Communications Associates
(404) 442-4364

MagicRAM, Inc. has introduced the Mercury Card, a voice/fax/modem card based on the PCMCIA 2.0 standard.

The modem was designed to be used for notebook, palmtop and pen-based computers.

The Mercury Card has the ability to integrate voice with applications, providing voice annotations of documents, voice electronic mail, multimedia presentations, remote access of personal voice and fax messages, phone mail and fax-back.

The product operates at speeds of up to 2,400 bit/sec. and can be used in PCMCIA Type II or Type III slots.

To conserve the battery life of portable systems, the Mercury Card also has a sleep mode and wake-up feature. It is available with voice-enabling software that supports either Windows or DOS environments.

The Memory Card has an introductory price of \$245.

►MagicRAM
(213) 413-9999

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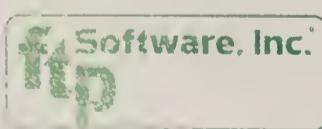
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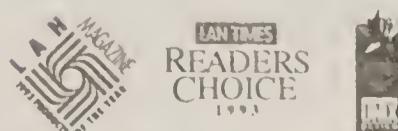
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files at 200,000 bit/s. And, it's considerably faster and less expensive than switched 56 Kbit/s. Our OPTIMA 288 is especially powerful for remote connectivity to or from a LAN, remote control, transferring large files, or multi-media. You could save as much as 75% on connect charges. Plus, like all higher speed Hayes modems, our OPTIMA 288 provides the



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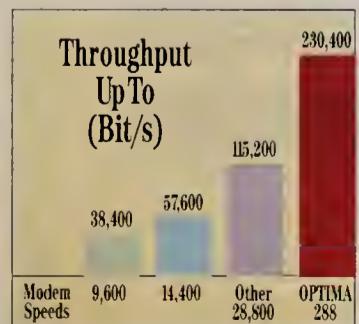
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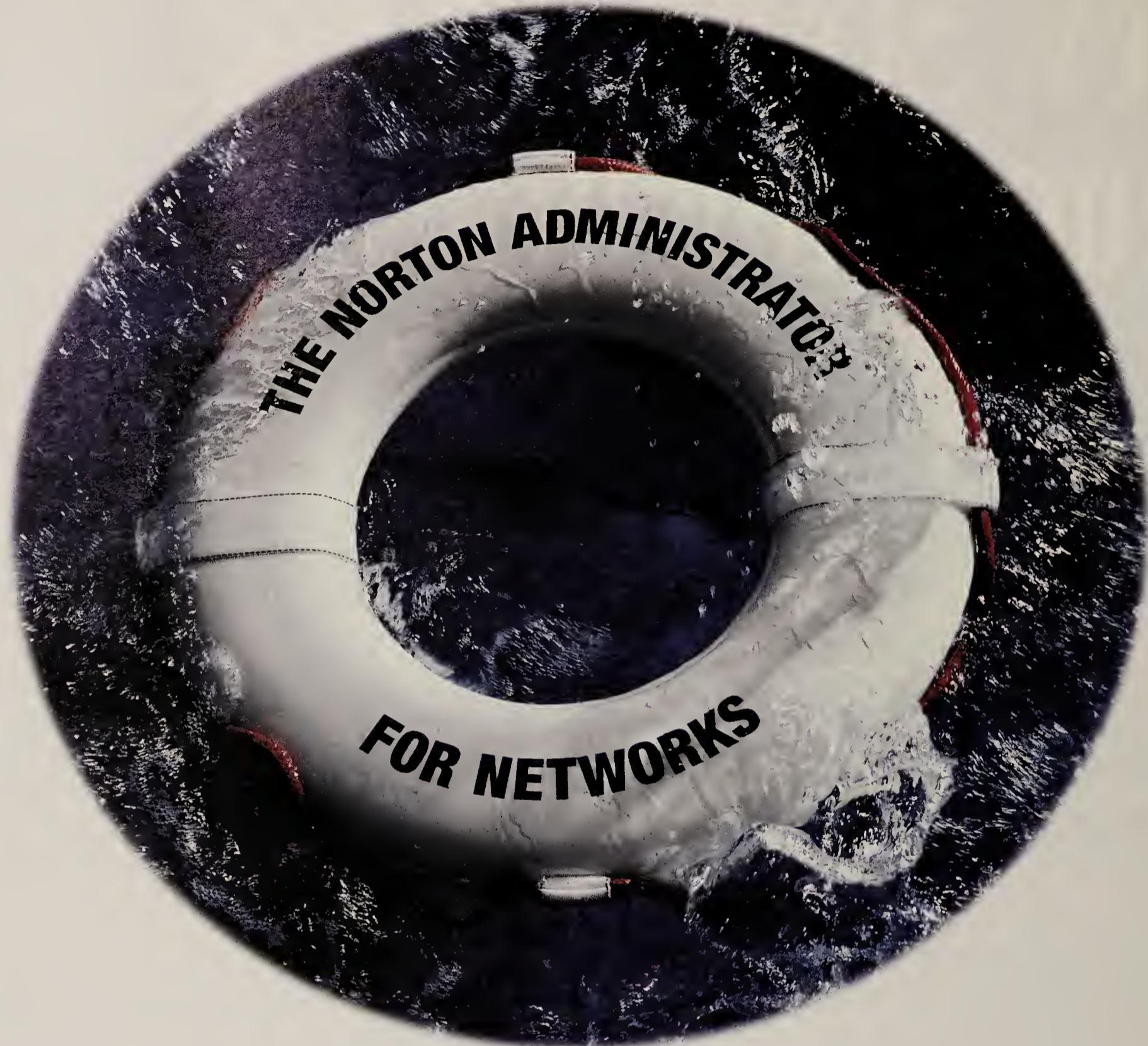
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Experts urge more 'super' in U.S. supers

Government called to head project

By Gary H. Anthes
WASHINGTON

A panel of experts from industry, government and academia has called on the federal government to spearhead development of a \$50 million supercomputer able to work at 1 trillion floating-point operations per second (TFLOPS).

The panel, which recently completed a study on high-performance computing for the National Science Foundation (NSF), recommended that the NSF lead the initiative, augmenting in some unspecified way an ongoing effort by the Advanced Research Projects Agency to develop a massively parallel TFLOPS computer by the mid-1990s.

The effort would involve multiple government agencies and the private sector. Started in 1995 or 1996, it could produce

Supercomputers, page 84

Systems futures

Industry sources predict that users will have access and tremendous power at greatly reduced prices within five years

By 1998 . . .

- ▶ PROCESSORS AND MEMORY WILL HAVE IMPROVED IN PRICE AND PERFORMANCE BY A FACTOR OF FOUR.
- ▶ BIGGEST SUPERCOMPUTERS WILL COST \$50 MILLION (IN 1993 DOLLARS) AND WILL HAVE PEAK PERFORMANCE OF 1 TFLOPS.
- ▶ \$1 MILLION MINISUPERCOMPUTERS WILL PEAK AT 20 GFLOPS.
- ▶ \$50,000 WORKSTATIONS WILL COMPUTE AT 1 GFLOPS.
- ▶ HIGH-END PCs WILL COST \$10,000 AND PERFORM AT 200 MFLOPS.

Source: National Science Foundation, Washington

Road to automation bumpy

By Johanna Ambrosio

Too many products without a coherent strategy behind them can almost do more harm than good when it comes time to automate the data center, many implementors agree.

Don Sesker, manager of strategic services at Disney Worldwide Services, Inc. in Lake Buena Vista, Fla., found this to be the case in his shop a couple of years back.

"We had automation everywhere. It was a real hodgepodge, out of control. We had all the tools we needed, but no one was responsible for it all," he said.

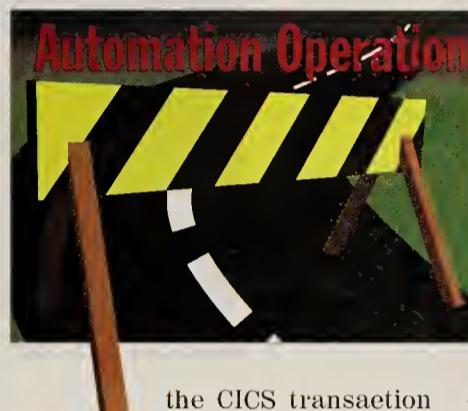
But then Sesker's team took some time to look at the whole process and figure out what they were trying to accomplish. The result has been a companywide automation initiative that does more than reduce data center head count and suppress the majority of console messages. Although these goals have certainly been reached, the real benefit has been improved service to end users by the company's having a better handle on what is going on underneath the machine covers.

No cohesive approach

Unfortunately, as Disney and other large companies have found, the path to providing better service through automation is often a bumpy road filled with fits and starts. Products are brought in

willy-nilly to solve problems in various parts of the information technology organization, but groups may use the same product in different ways or use the products to measure and control different aspects of the problem.

For example, the people who might tend to one MVS subsystem are a different group than those who are charged with looking after



the CICS transaction processing monitor.

These groups have not always communicated with one another, and it is possible they may use a different tool set to accomplish essentially the same job.

Then, too, data centers have suffered from the shoemaker's children syndrome. Although they work around computers, data center people have usually been the last to actually use computers to automate pieces of their jobs. Getting the funding, management commitment and resources in place to do this has not always been easy.

Even when the automation process begins, it can be rocky. Most companies start with products to suppress the never-ending stream of messages that operators have to wade through to determine if anything is going wrong inside the mainframe. These products are generally justified to upper management on the basis that if there are fewer messages to sort, fewer operators will be needed.

One thing at a time

Only when these products have met their targets are other pieces of the automation pie then brought in—to automatically start jobs that must begin each day at the same time, for example. As these other tasks are attacked, there may be different people or different kinds of computers from when the automation project first began, and the willy-nilly mix of products begins in earnest.

"We'd be a lot further along if we had more help," said the operations manager at a Midwest health care facility. "If you're not eliminating people or CPUs, it's hard to get the commitment."

As large shops have proved, however, it is possible to organize an automation effort. The Tennessee Valley Authority in Chattanooga put together a cross-functional team of about 10 people after having already installed a homegrown Automation, page 84

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SAP users turn to host version for transition

By Jean S. Bozman
SAN DIEGO

SAP America, Inc.'s R/3 packaged software applications for open systems are beginning to roll into corporate America, with 40 licenses installed since the product was introduced in North America last year. But users from several multibillion dollar U.S. firms at the Sapphire user group meeting here said they recently purchased the older, mainframe-based R/2 package to replace legacy software and are running only pilot projects on the Unix-based R/3.

Some users said they are waiting for R/3 to gain more functionality and to be-

come comparable in scope to the R/2 product suite. Use of the R/3 product is more widespread in Europe, where SAP AG is based in Walldorf, Germany. There are 4,300 copies of R/2 worldwide and 700 copies of R/3, SAP said. So far, only four North American sites are running R/3 code in production, the company said.

The R/3 Release 2.1 applications suite, with enhanced graphical user interface support and new manufacturing

and project-planning modules, is set to ship by year's end (see box). But multinational companies that need financial statements in several languages and currencies said they simply cannot wait.

Goodyear Tire & Rubber Co. assistant controller Joe Gilehrist said he is buying R/2 as a replacement for aging mainframe applications to run the \$11.7 billion company and is planning to evaluate R/3 for later use. SAP said a coexistence and migration strategy is under way for R/2 and R/3.

Generally, large SAP users report that their move to packaged applications is driven by a need to reduce information systems costs, replace aging mainframe systems and re-engineer outdated business processes at the same time.

"We decided that we were going to have to change our legacy systems, some of which have been with us for 25 years," said Jack Spurgeon, vice president and director of Systems and Computer Services division at \$3.9 billion Eastman Chemical Co., an Eastman Kodak Co. unit, off in Kingsport, Tenn. The firm will

install R/2 software on its mainframe "enterprise server" at headquarters and try R/3 for selected international applications.

"We're going to bring up a human resources module of SAP R/3 for decision-support in the international arena," Spurgeon said. "It will help us better un-

derstand how R/2 and R/3 coexist together." R/3 will run on Digital Equipment Corp. Alpha machines on top of Oracle Corp. databases, he said.

Convex Computer Corp. in Richardson, Texas, is one of the production R/3 sites. It is running "vanilla" SAP financial packages without change on Hew-

lett-Packard Co. Unix machines, said Doyle T. Baker, director of information resources. However, Baker said he is also using SAP's Abap/4 tool kit to write code that links the SAP R/3 modules to legacy applications.

Baker said Convex is running R/3 Re-

Continued on page 79

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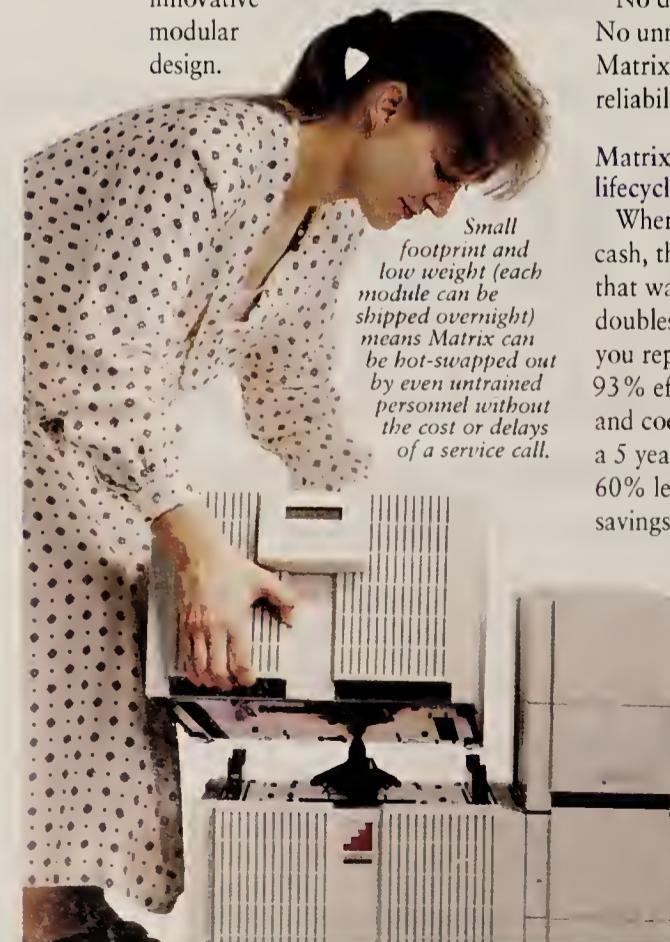
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The challenge: eliminate the tough installation, burdensome service contracts, high lifecycle costs and threat of a single point failure that plague existing midrange UPSes.

The solution: Go to pieces. Package premium power protection in an innovative modular design.



Small footprint and low weight (each module can be shipped overnight) means Matrix can be hot-swapped out by even untrained personnel without the cost or delays of a service call.

Matrix modularity means reliability

In some midrange UPSes, a small internal failure can bring down the whole UPS, and your system with it.

In contrast, the Matrix™ "100% Uptime" design isolates any problems to their 'block' which can be diagnosed and hot swapped-out while the protected system stays up and reliable.

No downtime. No service delays. No unnecessary risk. The fact is, Matrix delivers plug-and-play reliability no other UPS can match.

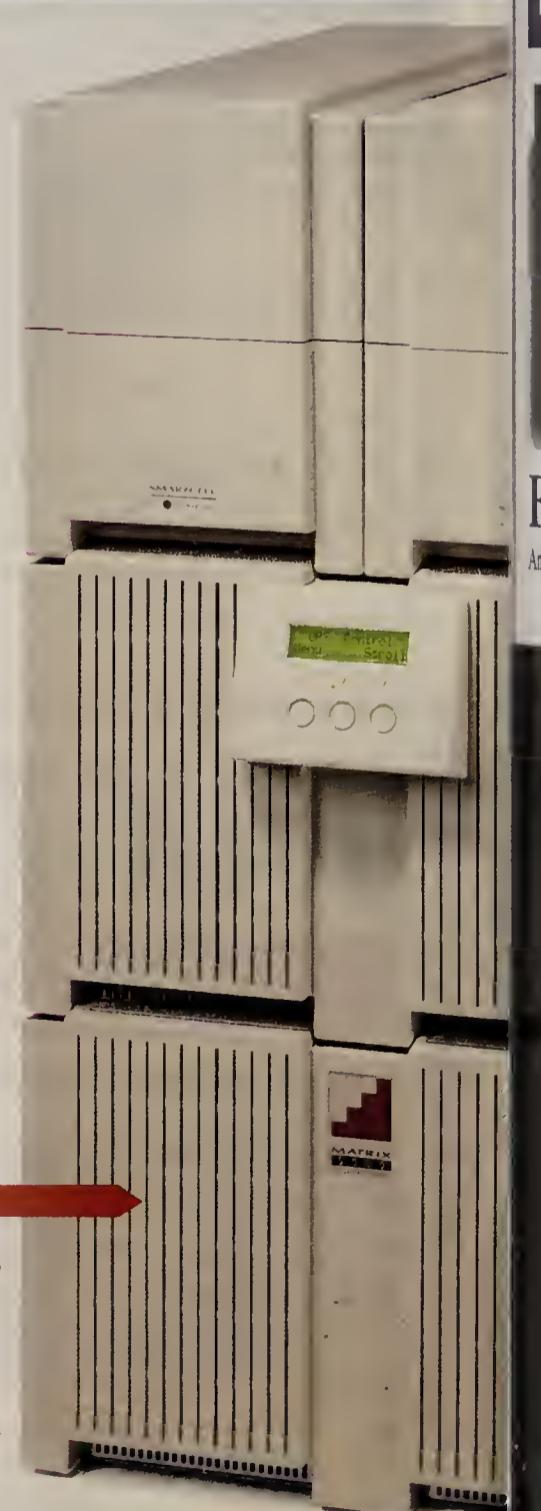
Matrix modularity means low lifecycle costs

When you're rightsizing to conserve cash, the last thing you need is a UPS that wastes it. Matrix modularity doubles expected battery life, saving you replacement costs, and operates at 93% efficiency, so you save electricity and cooling costs as well. In fact, over a 5 year lifecycle, Matrix costs up to 60% less than same-sized UPSes... savings you can't afford to ignore.

ISOLATION MODULE

Provides unmatched power protection and full VA capacity of multiple loads, even while in bypass.

Unlike older ferro-based designs, Matrix is compatible with servers which employ power-factor corrected power supplies. Standard 3-wire 208V input means no re-wiring.



lease 1.2 applications and that he already has plans to put R/3 Release 2.0 online by year's end.

Chevron Corp., with \$40 billion in annual sales, is one of the largest firms planning to move to R/3 on a corporate-wide basis. Chevron is launching a pilot program for Warren Petroleum, a \$1.6 billion subsidiary in Tulsa, Okla., that would run R/3 on HP 9000 Unix servers.

If successful, the financial system will be duplicated across the corporation, ac-

cording to James E. Zell, project manager of Chevron's Advanced Financial Information Systems group in San Ramon, Calif.

Change means savings

"Our goal is to save \$25 million a year by changing the business process and installing vendor-supplied software," Zell said. All told, the project to replace Chevron's 30-year-old financial applications may cost \$80 million over five years.

The \$532 million SAP AG has about \$59 million in North American sales, and analysts said it is well-positioned in the open systems application software market because multinational firms may know about SAP AG from their European operations.

"SAP's connection to the chief financial officer community gives it a bit of a lead," said Tom Willmott, a vice president at Aberdeen Group in Boston. "But they're struggling to get R/3 stabilized

and in production volumes."

Rival Oracle's Financials applications suite generates about \$180 million in revenue, including the use of Oracle consulting services, according to Gartner Group, Inc. analyst John Borelli.

In contrast, SAP, which has a North American division with headquarters in Philadelphia, partners with consulting firms, including Coopers & Lybrand, Andersen Consulting and Price Waterhouse.

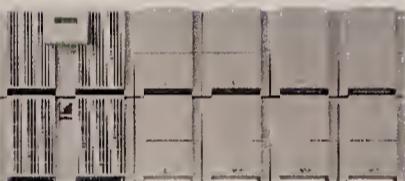
Still, SAP must compete with mainframe software mainstay Dun & Bradstreet Software, which is revamping its products for open systems, and PeopleSoft, Inc., which last week announced new client/server-based financial applications software.

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10 Compaq SystemPros	5000	10	10 minutes
10 RS/6000s w/ 19" mon.	5000	10	
15 386/33s w/VGA	5000	10	
4 Sun 4/490s	5000	11	

Systems	Std	Matrix	Std Runtime
2 DEC Vax 4000-500s	3000	12	12 minutes
3 HP 9000s	5000	11	
IBM AS/400	3000	13	

* Shown as standard configuration. For additional runtime, simply add more SmartCells.

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Matrix offers a control panel in four languages, plus programmable output voltages, automatic bypass and more. Best of all, even the electronics module is completely hot-swappable for maximum system uptime.

Line-interactive design with online inverter means high-reliability, low operating costs. The unit's surge protection is backed by APC's \$25,000 ABSOLUTE Downstream Protection Policy which will repair/replace any equipment damaged by a surge while protected by Matrix (see details).



Matrix provides auto-shutdown support of all major network and midrange OS. The SNMP-compatible Matrix also supports APC's Measure-UPS which monitors temperature and humidity, and monitors smoke, fire, water, and security detectors.

And of course, Matrix is backed by a suite of award-winning support programs, including a two-year warranty, 24X7 toll-free tech support, a Compuserve forum, software upgrades, and more.

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Galileo merger/move complete

By Ellis Booker

Last month one of the world's biggest databases, Galileo International's computerized reservation system (CRS), moved electronically from a data center in Swindon, England, to Denver.

The data transmission was the final leg in the consolidation of the Apollo and Gemini CRS systems. Last March, Covia Corp., the former United Air Lines unit in Rosemont, Ill., that developed United's Apollo CRS, and UK-based Galileo, the CRS owned by a consortium of European carriers, agreed to merge to form Galileo International.

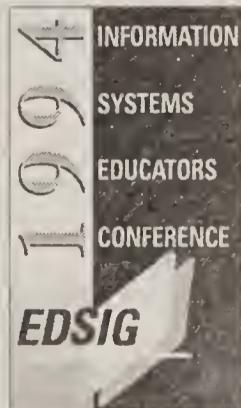
Moving the data across the Atlantic involved six months of planning, two dress rehearsals and nearly 1,000 tapes' worth of download data, according to Galileo, which issued a report on the event earlier this month.

In addition, the Galileo network, which supports about 28,000 travel agency terminals, was redirected to Denver from Swindon. The process took 41 hours.

The 334G-byte database includes 2.25 million passenger files.

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HP addresses user migration to Unix

Explores the option of porting Image to the HP 9000

By Mark Halper
PALO ALTO, CALIF.

With stalwart Hewlett-Packard Co. customers taking a Unix path, it is not surprising that HP is deciding whether to port its proprietary Image/SQL database for the HP 3000 minicomputer to its Unix-based HP 9000.

Giant HP 3000 shops such as Northern Telecom, Inc. and Minnesota Mining & Manufacturing, which operates 150 of the venerable HP 3000s, have declared a long-term goal of migrating to Unix, and there is no guarantee their migration paths will keep them on an HP road.

Users and analysts agreed that if HP were to offer these users the option of walking their database applications from the HP 3000 over to the HP 9000, HP would increase the chance of retaining them as customers, provided the users do not plan to abandon the relatively hierarchical Image/SQL for a more relational engine.

HP is circulating a survey that asks users, among other questions, whether they would like to run Image on the HP 9000 [CW, Sept. 27].

Holly Chapman, director of MIS at mail-order retailer The Hamilton Collection Ltd. in Jacksonville, Fla., said that if she had had a Unix Image alternative three years ago, she may have decided to remain with HP rather than switch to a

Sun Microsystems, Inc. platform for the company's order-entry and marketing system.

"By moving, we were basically throwing away 10 years' worth of software," Chapman said. "If there had been the option, I would've liked to have sold it to my boss."

As is the case with many Unix migration decisions, Hamilton's move to Unix was not decided by the information systems shop, Chapman said. It was mandated by a top Hamilton executive who wanted the company to move toward open systems.

Dave Wilde, information management program manager at HP, said HP is monitoring the possibility that Image's lack of availability on the HP 9000 instigated some defections. It is too early to determine survey results, he noted.

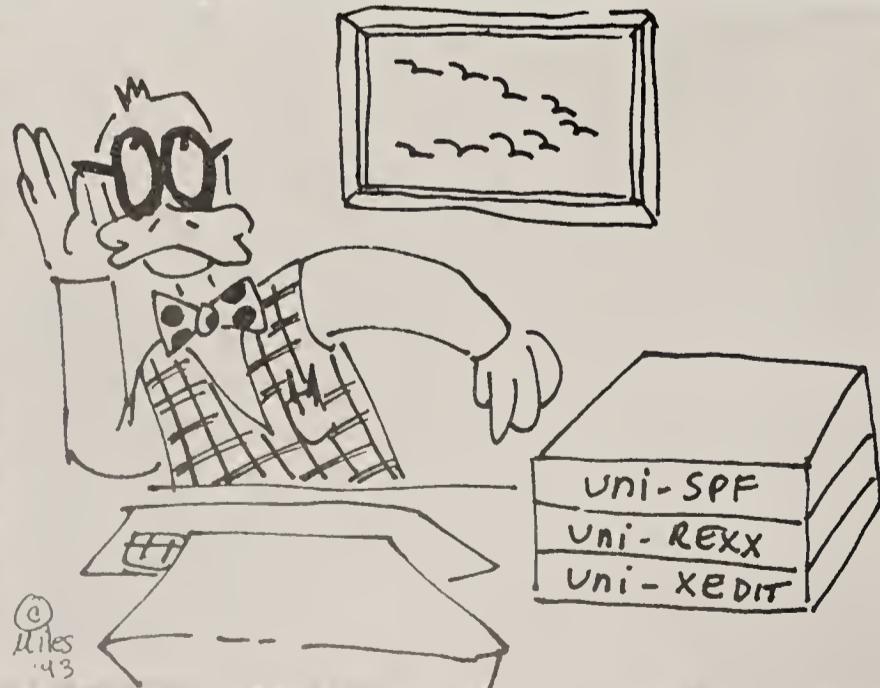
Understands the reasoning

One large manufacturing company, like any prudent IS group moving to Unix, plans to shop the Unix market, according to one of the company's database analysts.

In this case, Image is not in question because the company plans to move to a relational database.

Nonetheless, the analyst saw the wisdom of HP's offering Image for the HP 9000.

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"There's probably a number of people who would like to do that, but that would be more of a tactical move than a strategic one for them," he said. While the move would spare his shop the money and effort of porting Image applications to the HP 9000, it would not provide the strategic client/server direction that his company has deemed appropriate for its business future.

Birket Foster, president of M. B. Foster Associates Ltd., a Chesterville, Ontario-based vendor of desktop integration tools, noted that offering Image for the

HP 9000 would be a potential boon to HP.

"The fastest way to make the transition easy is to offer them Image on a different box, so they don't have to do a conversion," he said. "Otherwise, they could end up on something else, like a Sun."

IVI Travel, Inc. in Northbrook, Ill., is another longtime HP 3000 shop converting much of its operations to Unix.

Manager of MIS operations Jerry Kopecky noted that he will not be waiting for Image on the HP 9000. IVI Travel is installing Informix for its Unix machines, he said.

The Belgian waffle

Hewlett-Packard may be equivocating over whether to offer Image for the HP 9000, but if it decides to take porting action, it already has a development effort by a Willebroek, Belgium-based equity partner.

Three years ago, Denkart NV, a vendor of tools for the HP 3000 and HP 9000 that is 25% owned by HP, developed a version of HP 3000 Image for the HP 9000 with HP.

But for reasons that sources said they believe have as much to do with political sensitivities as with HP's and Denkart's stated explanation — performance shortcomings — HP and Denkart decided not to market the product.

Neither HP nor Denkart will confirm it, but HP is believed to have shelved the product because of the maelstrom of discontent churning through the HP 3000 community at the time.

HP 3000 users were revolting over

signs that HP was abandoning the machine and its MPE operating system in favor of Unix; porting the machine's database to the HP 9000 would have further fueled their anger, which has since diminished with subsequent HP 3000 commitments from HP.

Dave Wilde, information management program manager at HP, said that when Denkart developed the product, HP determined there was not a demand for it and that too much money and work would be required to bring performance up to acceptable levels. Among its shortcomings at the time, Image for the HP 9000 lacked a transaction manager, he said.

Denkart general manager Guido Van Brempt estimated that it would take about three months of development to finish the product. The process would entail supporting many of the changes that HP has made to Image in the three years since Denkart stopped work on the project.

—Mark Halper

Briefs

Unisys wins \$81M pact

Unisys Corp. will be handling the state of Florida's Health-Care Administration's Medicaid processing under an \$81 million, 69-month contract.

Wang hires imaging exec

Wang Laboratories, Inc. hired Andre Boisvert, a former IBM, Cognos Corp. and Synon, Inc. executive, as vice president of imaging and workflow product marketing.

Nasdaq trades mainframes

The Nasdaq Stock Market, Inc. is replacing its Unisys mainframes with newer models. The exchange has signed a five-year, \$25 million contract with Unisys for two 2200/900 systems and services designed to sup-

port the stock market's 800 million-share daily trading volume.

The mainframes, which will be installed next year at Nasdaq's primary data center in Trumbull, Conn., and its backup data center in Rockville, Md., will replace Unisys 1100/90 mainframes. They will be linked to one another over T1 connections.

NCR support moves

NCR Corp. has established a Customer Focused Business Model designed to provide specific customers with teams of NCR support staffers. As part of the model, NCR named Bill O'Shea, currently senior vice president of NCR's Network and Integrated Systems unit, to senior vice president of worldwide marketing. Tom Mays, a senior vice president of the General Purpose Products Group, has been appointed senior vice president of products and systems.



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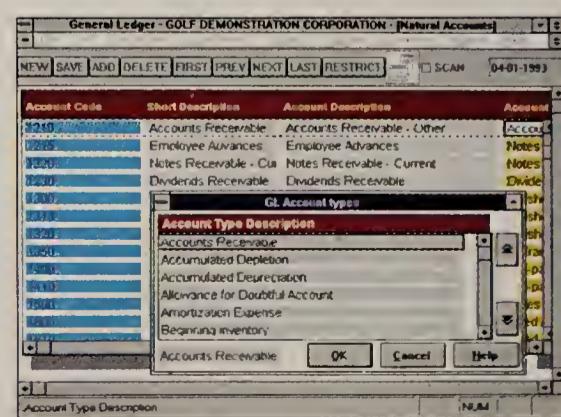
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Automation

CONTINUED FROM PAGE 77

message suppression system.

The people came from technical services, production management and computer operations, among other various areas.

The Church of Jesus Christ, Latter Day Saints in Salt Lake City has also expand-

ed its operations scope on the fly. A few months ago, a cross-functional team started going out into the business units to help end users use automation more effectively. The team helps end users identify and implement projects.

"We've been doing automation for about seven years, from the production and operations sides," said Russ Duncan, information utility consultant for the church. "Now we've broadened it to involve the users."

These cross-functional teams will become even more important in the future, users said.

The next big frontier in operations, to become technologically possible within three years, is to manage operations by application instead of by the technical subsystems involved.

In other words, the operations staff will look at a general ledger or a human resources system to find out how well it is functioning or to fix it if something

goes awry. "We're moving to the ability to manage by application," said James Spangler, computer operations manager at United Parcel Service, Inc. in Mahwah, N.J. "We need to take input from all kinds of different sources to find out how an end-user application is doing."

That will require the ability to tie together operations products from different vendors, as well as the cross-training of data center technicians in each others' areas.

Supercomputers

CONTINUED FROM PAGE 77

duce in two years a "nationally shared" supercomputer with a price tag of \$50 per TLOPS, plus a similar cost for development, the panel said.

The machine would be used by federal agencies, universities and industry on a broad range of scientific applications.

The report, "From Desktop to Teraflop: Exploiting the U.S. Lead in High Performance Computing," did not lay out a detailed blueprint for action.

"The committee thinks of this as a vision; implementation is an open question," said Marye Anne Fox, a member of the NSF's National Science Board, which commissioned the study.

The report also did not address concerns raised several months ago in a report by the Congressional Budget Office.

The budget office report said the government's high-performance computing and communications program — in which the NSF is a key player — is focusing too much on supercomputer technology and has overly optimistic hopes for massively parallel computers [CW, July 12].

A footnote in the report said some members of the panel dissented from the TLOPS computer plan, revealing they "have reservations about the urgency of the recommendation, are pessimistic about the likelihood of realizing the [planned] effective performance in applications or are concerned about the possible opportunity cost to NSF of such a large project."

Some new ideas

The panel also recommended that the NSF do the following:

- Take the lead, under White House direction and in cooperation with other agencies, to expand access to high-performance computing by all sectors of the country.
- Double its current level of annual investment — \$22 million in workstations — for its 20,000 funded researchers.
- Boost funding for experimental parallel processing technologies such as distributed file systems and message-passing operating systems needed to harness after-hours idle capacity in arrays of PCs and workstations.
- Devote increased effort to systems software, algorithms, models and computational strategies to wring better real performance from high-performance computers, especially parallel systems.

"Now, tell me about client



New Products

Sybase, Inc. has announced SQL Monitor Release 10, a software tool designed for distributed client/server database performance monitoring and tuning.

According to the Emeryville, Calif., company, SQL Monitor gives companies mainframe-like control over the system performance of their SQL Server-based

distributed database environments.

SQL Monitor consists of SQL Monitor Server, which accesses SQL Server shared memory as a background task to capture SQL Server performance statistics; and SQL Monitor Client, which connects to the SQL Monitor Server and displays performance data via a graphical user interface.

SQL Monitor Server prices start at \$2,580 for an unlimited-user Unix system license. SQL Monitor Client starts at \$595

for a single-user Windows 3.1 license and at \$1,880 for a single-user Unix system license.

► **Sybase**
(510) 596-3500

Sterling Software, Inc. has introduced Sams:Automate Release 3.1, an IBM MVS storage management automation and reporting tool.

According to the Dallas company, the product delivers on-line, real-time space

utilization information that is used to automate routine critical storage management functions.

This version also includes a job submission service to allow ad hoc job creation, which enables users to manually submit a job while on-line without having to leave Sams:Automate.

Release 3.1 monitors the storage environment by selecting, viewing, filtering and sorting messages that are written to a storage message log.

Pricing begins at \$24,290 for Group 30 processors.

► **Sterling Software**
(214) 891-8300

Information Builders, Inc. has introduced Focus Report Writer and Focus Interface for SAP on IBM's MVS platform.

According to the New York company, Focus is a complete application development and decision support tool that includes business graphics, statistics and comprehensive reporting along with automatic facilities for producing screens, logic and database designs.

The product offers a scalable database server and portability across mainframe, midrange and microcomputer environments with transparent data access. Focus can create applications ranging from simple reports to large-scale production information management systems.

The Focus Report Writer package is priced from \$47,000 to \$102,000. Prices for Focus Interface for SAP range from \$25,000 to \$52,500.

► **Information Builders**
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Software 2000, Inc. has introduced Release 7.3 of its Human Resources 2000 (HR2000), business management software.

According to the Hyannis, Mass., company, HR2000 is an integrated set of applications for managing all aspects of a company's human resources function.

Designed for IBM's AS/400, the series consists of Personnel 2000, Payroll 2000, Flexible Benefits 2000, Defined Contributions 2000 and Industrial Health 2000. Enhancements in Release 7.3 include bi-directional intercompany transfers, enhanced shift processing, a purge applicant data function, data-sensitive transactions within benefits administration and a tax operations module.

Prices for the HR2000 series range from \$50,000 to \$150,000.

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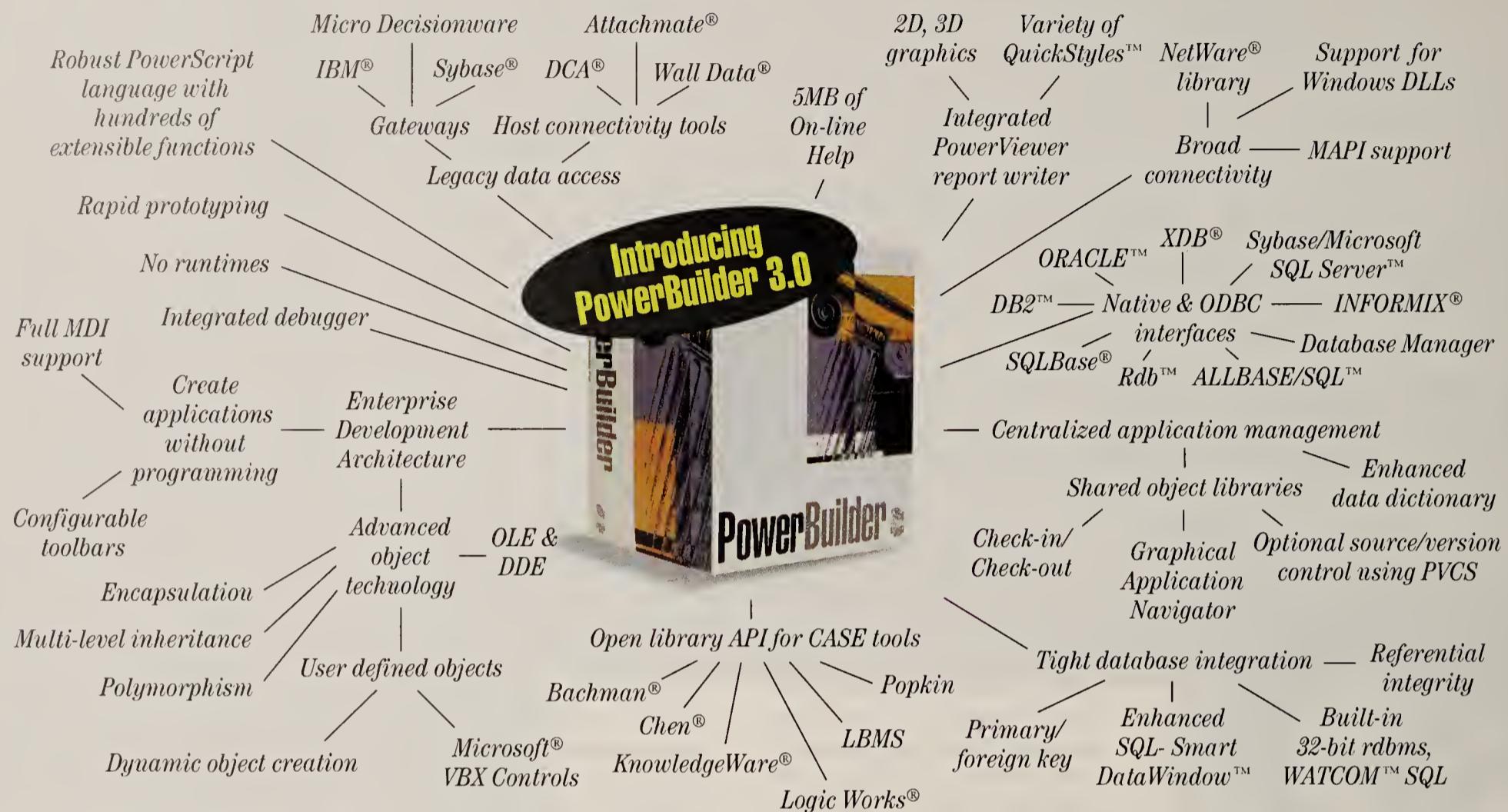
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4GL bridges Unix, Windows

Informix users cite language's flexibility

By Kim S. Nash

Informix Software, Inc. in Menlo Park, Calif., recently shipped a Windows version of its fourth-generation language designed to convert character-based Unix applications to Windows and build single versions of new applications that can be deployed on either Windows or Unix systems.

That kind of flexibility pleased two early users, but they noted that they would like Informix development tools and databases even more if the tools worked with products from other vendors.

"We'd have more freedom," said Terry Walker, senior programmer analyst at Siemens Energy and Automation in Raleigh, N.C. The ability to interchange Informix-made and third-party tools "might lower our

costs—who knows?" Walker said. "For now, though, we cannot look into that option."

Not a team player

To be sure, users of other databases and tools, including products from Oracle Corp. and The ASK Group, Inc., have voiced concerns over the same matter: Database engines and development utilities work well with sister products but not with those from rival firms.

Informix is expected to break off its development tools, adding support for other databases sometime next year, according to one user. Nancy Li, an Informix product

manager, declined to comment.

Here and now, however, Informix-4GL for Windows has saved early users time and money that

4GL, page 88

The next step

After adding Windows support to Informix-4GL, the next step for the company is object-oriented technology. Informix-4GL++, as the follow-on is code-named, should arrive late next year or in early 1995, according to a spokeswoman.

manager, declined to comment.

Here and now, however, Informix-4GL for Windows has saved early users time and money that

4GL, page 88

Tools

LBMS promises effective control

By Melinda-Carol Ballou

Targeting developers who seek to set up consistent development practices across client/server environments, LBMS, Inc. recently announced Process Engineer (PE) Version 2.0.

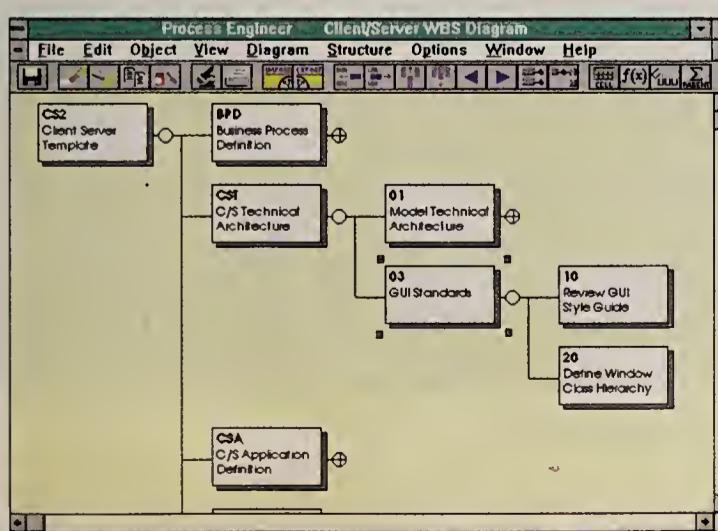
Houston-based LBMS is a provider of Windows-based client/server computer-aided software engineering (CASE) and process

management tools. PE 2.0 is a customizable environment for defining, deploying, measuring and improving the application development process. It now offers full Windows support.

Current LBMS users briefed on the new version talked about the importance of such tools, both for traditional development and in client/server environments.

"Without a tool [like this] you don't have consistency in the development process," said Sharon Cross, a project manager at Boston Edison Co. "If project managers are trying to keep track of

LBMS, page 89



PE 2.0 is a customizable environment for defining, deploying, measuring and improving application development

CASE takes its place in client/server universe

By Melinda-Carol Ballou

Computer-aided software engineering (CASE) is overcoming a bad reputation and is beginning to take its place in the brave new world of client/server computing, according to some users and analysts who attended a CASE and Objex World Conference last month.

Several of these users and analysts stated that a steep learning curve and exaggerated expectations of the advantages of using CASE tools have led to disappointment and problems in the past. But they also said that CASE tools are required to act as a compass through the morass of client/server and distributed application development.

"The first generation of CASE tools had problems. It was difficult to use and based on a mainframe model of computing," said Judith Hurwitz, president of Hurwitz Consulting in Watertown, Mass. "The folks that stuck with the good early tools and took the time to really learn and use them got some real value, but there are no magic bullets, and CASE is no exception."

New life for CASE

However, the new face of CASE—with graphical user interfaces to make tools easier to use—and the need to move beyond lower-end client/server tools to take infrastructure and design into account are giving "life to the whole CASE industry," Hurwitz said.

While lower-end client/server tools such as Gupta Corp.'s SQL Windows, Powersoft Corp.'s PowerBuilder and Microsoft Corp.'s Visual Basic offer good back-end code generation and construction, they lack automated front-end analysis and design support, said Gerald Bennett, a senior information systems analyst at Carolina Power and Light Co. in Raleigh, N.C.

Even though Bennett spent much of his time at the show learning about client/server, object-oriented and business process re-engineering issues rather than attending CASE-related sessions, he said CASE will play a key part in his group's move to client/server.

"I see CASE tools playing a role [in this area] but not as big a role as they were originally billed as playing," he said. "You need to have the front-end framework for developing larger [client/server] systems, and the CASE tools will provide that."

He said his organization is just kicking off its client/server production effort and is moving out of pilot mode. CASE tools will play a key role in that transition, he said.

The need for CASE in client/server environments will be even greater than the need for CASE for centralized, mainframe application development, according to several analysts.

"Once you move out of the glass house, there are greater levels of complexity," said Ed Acly, an analyst at International Data Corp. (IDC), a Framingham, Mass., consulting firm. "Only the very naive would think that CASE is dead."

He said research indicates IDC customers

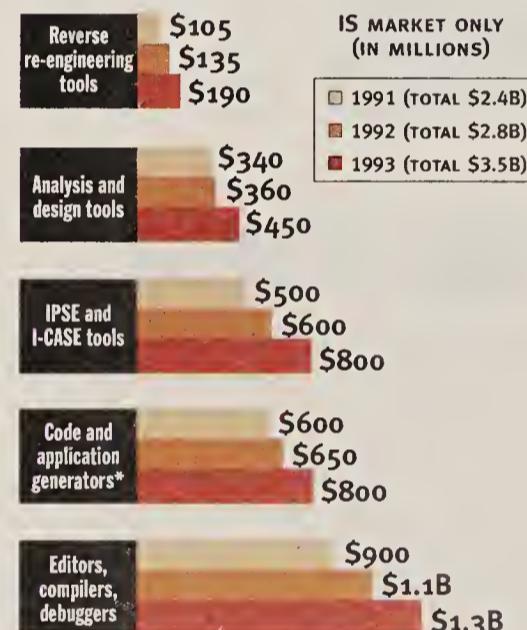
plan to continue to adopt CASE, but they want the tools to move outside the traditional data center to handle client/server and distributed systems. And multiple vendors have begun to do just that [CW, Oct. 18].

"Client/server helped bring [the need for CASE] to light," said David Sharon, president of CASE Associates, Inc., a consulting firm in Oregon City, Ore. "Moving applications off the mainframe is the function of tools that lets you do redevelopment and also of tools that let you control and synchronize what you're doing with legacy systems," he said.

He said "CASE-bashing" resulted from both

Making its CASE

Integrated Project Support Environment (IPSE) and I-CASE tools have been the leading growth areas in the CASE market



Source: CASE Associates, Inc., Oregon City, Ore.

frustrated user expectations and a narrow perspective about the definition of CASE, limiting it to design analysis, requirements analysis and code generation. The real surge for CASE will be in the areas of configuration control, process management and synchronization of development activities, he said (see chart above).

Users are still deciding. A development group at Federal Express Corp. in Memphis is trying to determine the future use for CASE tools. Like Bennett, Ken Preslar, a technical adviser at FedEx, spent little time at the Objex CASE sessions. He said his group will probably continue to use CASE tools, but exactly how and whether they will fit into client/server development have yet to be fully determined.

"I certainly appreciate what CASE tools offer to us [currently] and what they potentially offer us," he said. "I'm anxious for the time when the tools are a little more stabilized. We came into using CASE tools with high expectations, and so far I have found the tools coming up short of what we expected. I'm not sure that it's because the tools are failures, but [rather] that our expectations are too high."

4GL bridges Unix, Windows

CONTINUED FROM PAGE 87

they might otherwise have spent writing new applications. For example, the Florida Association of Court Clerks wants to

expand a child-support system from a Unix character-based mode to run on PCs with a Windows graphical user interface.

The association brought in Unisys Corp. to help with the transition and build new features into the system. The first part of the process — porting the existing application to Windows — is done, said Alain Wampouille, a Unisys senior programmer analyst.

Where rivals stand

• ASK's Ingres SQL

Windows product runs under graphical Unix and Windows environments with no support for character-based applications.

• Sybase, Inc. does not offer a Windows-based 4GL, and Oracle sells Unix and Windows generation products separately.

• Powersoft Corp.'s PowerBuilder and Gupta Corp.'s SQLWindows run only in Windows setups. They do not support Unix.

"Part of the reason we wanted to beta [test] Informix's Windows product is to get a jump on this stage of the project," Wampouille said. Code recompiling and rewriting is unnecessary, he explained. "You load the Informix tool and then run the application on the target platform. It takes minutes."

Walker said he does not expect a two-

minute job, mainly because he has several large applications to migrate, including sales, marketing and engineering systems. By mid-1994, much of the transition to Windows from character- and Motif-based Unix programs should be complete, Walker said.

"That time period probably won't be an Informix consideration but [may result from] running into capacity limits of Windows 3.1," he added.

Informix-4GL for Windows is priced at

\$1,995 for a development version and \$300 for a runtime edition. Among its new features are the following:

- A graphical form painter to let users create and edit fields in predefined forms via drag-and-drop methods.

- A graphical interactive debugger to let users run code and debug existing code in separate windows at the same time.

- Context-sensitive on-line help facilities for Informix tools through pop-up Windows and pull-down menus.



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Briefs

Uniface rolls out bridges

Fourth-generation language vendor Uniface Corp. recently introduced its second generation of computer-aided software engineering (CASE) integration with the availability of Uniface CASE Enablement Packs that bundle a new Uniface Model Synchronizer with CASE bridges to 16 leading CASE tools. The synchronizer offers developers integration between the design and construction phases of application development. Also bundled with the packs is CASE Interface Guidelines, a document that details development of the bridge and modification procedures.

Debugger buyout

AIB Software Corp., a developer of productivity tools, has acquired Virtual Technologies, Inc., a purveyor of Unix software and the Sentinel debugging environment.

Protocols integration

AT&T/NCR Corp. and Protocols, Inc. announced an agreement to integrate Protocols' advanced statistical data collection and expert-systems troubleshooting capabilities with the NCR StarSentry enterprise management platform. The integrated release is scheduled for the second quarter of 1994.

LBMS promises effective control

CONTINUED FROM PAGE 87

things with a method, a bunch of books and a pencil and paper, it just doesn't happen as efficiently. Automating the process makes it easier to gain compliance. We don't hit [developers] over the head with a hammer, but [PE] reminds them of what they are supposed to do."

Cross said her group was looking forward to this release to support the rollout of standard methodology processes for client/server development at Boston Edison. Particularly useful with the new version are its iterative prototyping and easy-to-use visual project planner, intelligent resource assigner, estimator and scheduler interface, she said.

Iterative development lets users create chunks of an application, ship out those portions to users, get reviews back and then revise the code, as opposed to coming out with an entire huge project, she explained.

Popular new features

According to Phil Fason, a senior manager at Holiday Inns Worldwide in Atlanta, the new version's ease of use and more effective process management are im-

portant features.

"We get feedback from managers using similar processes, then go and make the changes once. This lowers the work load and also lets us measure and manage the process," he said. "Before, everyone just did their own thing."

PE 2.0 offers a suite of LAN-based tools: Process Engineer, PE/Process Library and PE/Process Manager.

Process Engineer targets project managers and lets them rapidly build project plans from methodology templates; define and store information on progress, deliverables, roles and resources; apply multiple estimate models; and create reports and bidirectional interfaces to a range of project scheduling tools. Process Engineer can also invoke other development tools, such as LBMS PE 5.0.

Solid base

LBMS has an installed base of about 25,000 users and generates roughly \$40 million in revenue.

Library of methodologies

The PE/Process Library is a LAN-based repository that offers automated access to development methodologies, LBMS officials said. With this version, the library offers customizable process templates; reusable process components or kernels; and hypertext access to all methodology reference manuals. It also includes configurable metrics models to estimate and measure the development process.

PE/Process Manager, a maintenance tool for PE/Process Library, lets developers define, plan, control, measure and improve the software development process, they said.

Another early user of the project said that his group is able to coordinate processes across multiple projects with PE.

"The tools are important because they allow the rapid assembly of custom project templates to provide consistency," said Glenn Shimamoto, a vice president at Bankers Trust Co., a New York banking and investment firm, about PE 2.0. "We need to do rapid client/server development all the way through traditional development. PE allows you to service a variety of different processes across projects."

Process Engineer 2.0 is shipping now for \$2,500 per client. PE/Process Manager costs \$2,500 per client, and PE/Process Library costs \$35,000 per server.

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Object-oriented languages

Visual language gains ground with programmers

By Andrew Safer

A visual programming language developed by Prograph International, Inc. is making inroads into corporate MIS departments. Companies that have built Apple Computer, Inc. Macintosh-based applications using Prograph 2.5 include The World Bank, J.P. Morgan & Co., Montgomery Securities, Wisconsin Power & Light Co. and Emerson Motors.

As with other object-oriented languages, Prograph defines objects and methods by means of icons instead of text, eliminating the need for C, Pascal or any other textual language. Each major category of operation is assigned a unique pictogram, or icon. By connecting them, the programmer creates the code as a diagram of icons.

Popularity on the rise

At the Halifax, Nova Scotia company's first annual Programmer's Conference recently, Kurt Schmucker, a department manager in Apple's Human Interface group, said, "I think Prograph is currently on some sort of cusp. On the other side of that cusp, it will be a very mainstream player in the generation of the standard double-clickable, document-centered tight applications you see on the Macintosh."

At Wisconsin Power & Light, the MIS department spent more than \$1 million to make engineering models of distribution circuits by customizing an automated mapping system. The models help the utility optimize its 17,000 miles of circuits. Engineering computer analyst Eric Knapp estimates this could save in excess of \$20 million annually. But the project was scrapped after 15 months in development.

Knapp, who had been on the team, moved from MIS to the engineering department in order to build the application in Prograph while he worked closely with the distribution engineers. It took six months to create the first engineering model, and four distribution engineers have been beta testing the application since August.

"They're able to look at data for a square mile section a lot easier than they can on the text-based mainframe system. They can know a lot more, a lot quicker," Knapp said.

Knapp credits Prograph for the success, saying the visual language lends itself to graphical display and it is well-suited to the corporate environment, where applications must be developed within six-month time frames. "We now have the tools corporate developers can use to write real applications in-house in a reasonable time frame," he said.

Philip Claringbull, MIS director at

Montgomery Securities in San Francisco, selected Prograph to automate the process by which brokers enter orders and forward them to the trading floor for execution. At Montgomery, an IBM AS/400 runs the trading floor and 100 Macintoshes provide the interface.

"Since we have Macs sitting on the desks, the requirement was to make it a more graphical interface, so that it would look like a ticket. The whole idea was to make it as seamless and natural as possible," he said.

Claringbull said the application was developed in-house in two months, using the LU6.2 Advanced Program-to-Program Communications interface between the client and the AS/400. His programmers had not previously written applications on the Macintosh, and Claringbull estimated that it would have taken significantly longer had they programmed in C or C++ language.

The application went through beta testing in October and is scheduled to go live this month.

J.P. Morgan used Prograph to develop a component of a precious metals options trading system, and the World Bank used Prograph to build a fuzzy-logic market analyzer. Both applications have been completed but they are not yet in use.

Paul Harmon, editor of the "Object-Oriented Strategies Newsletter" in Boston, said of Prograph, "It's well put together, the interface works well, and it does what they claim it does in terms of generating code."

Some aspects of Prograph are user-unfriendly, Harmon warned: "The data flow models are almost as intimidating as learning how to write Cobol."

Macintosh and more

Harmon said Prograph International needs to grow beyond the Macintosh platform and support more standardized languages. He said the company will also have to change Prograph's notation structure when a standard object-oriented methodology emerges.

The company began shipping its new release of Prograph, CPX, on Oct. 15. Mark Szpakowski, Prograph International's manager of human interface, said CPX is more powerful and considerably faster than 2.5. He said the class library is comparable to MacApp, and that a multifile project environment makes it easier for a small team of programmers to work together.

The company said it is developing versions for Microsoft Corp.'s Windows NT and Win32s, the PowerPC and Unix for release in 1994.

Safer is a writer in Halifax, Nova Scotia.

Application Development

New Products

Magic Software Enterprises has introduced MagicFrame, a product that enables users to directly access mainframe applications in a transparent process as if they resided locally.

According to the Irvine, Calif., company, MagicFrame consists of a 3270 terminal emulation program integrated with Magic, the firm's rapid application development system.

The combination provides direct communication between PCs and the mainframe, regardless of the database management system, mainframe operating system or transaction system.

The product automatically and transparently updates mainframe data on-line.

Programming is not required. MagicFrame is available for Magic Versions 5.02 and 5.5.

Pricing starts at \$1,800 per user for development and \$200 per user for deployment.

► *Magic Software Enterprises
(714) 250-1718*

Borland International, Inc. has announced the dBase Compiler 2.0 for DOS.

According to the Scotts Valley, Calif., company, the compiler includes 32-bit support that allows users to compile and distribute applications created in dBase that are up to twice as fast as applications developed with dBase IV 2.0 or dBase Compiler 1.0.

An intuitive menu-driven user interface is provided, and the dBase Compiler 2.0 is 100% compatible with the dBase language.

Without modification, users can create stand-alone executable applications from dBase III, dBase III Plus and dBase IV programs.

Other features include AutoCompile and AutoLink, automatic access to 4G bytes of memory through the dynamic Virtual Memory Manager and Manufacturing Automation Protocol file creation that assists developers in documenting and modifying programs.

The dBase Compiler 2.0 for DOS supports 16-bit .EXE generation on all Intel Corp. 80286-based or higher IBM-compatible PCs running DOS 3.3, 4.01, 5.0 or 6.0.

The dBase Compiler 2.0 for DOS has an introductory price of \$199.95 until Jan. 31, 1994, after which it will cost \$495.

► *Borland
(408) 431-1000*

Bluestone, Inc. has introduced DB-UIM/X, a software development environment for building Open Software Foundation (OSF) Motif graphical client/server applications for relational database management systems.

The product is a Unix-based database tool that incorporates the core front-end technology of the UIM/X graphical user interface development tools for OSF/Motif.

According to the Mount Laurel, N.J., company, DB-UIM/X enhances UIM/X's key features with four specialized components collectively known as the Network Object Toolkit.

These components include the Network Object Browser, Network Object Bind Editor, Stored Procedure Viewer and the Network Object Bind Browser.

The product will be available in December. Prices for DB-UIM/X and UIM/X will be \$6,000.

► *Bluestone
(609) 727-4600*

Software Productivity Research, Inc. has announced the Windows version of Checkpoint, a knowledge-based software management tool.

According to the Burlington, Mass., company, Checkpoint adds value to the management process by suggesting alternate approaches to development; estimating software effort, cost, quality and deliverables; modeling alternate scenarios with a full range of environmental and product features; and providing performance benchmarks based on organization-specific and industrywide standards.

In single quantities, Checkpoint with documentation costs \$20,000 per copy, \$60,000 for five copies and \$99,000 for a 15-copy site license.

► *Software Productivity Research
(617) 273-0140*

Viasoft, Inc. has announced Release 3.1 of the Existing Systems Workbench (ESW) Testing facility.

According to the Phoenix company, ESW Testing 3.1 is an interactive testing facility of the company's ESW.

A key option is support for the PL/I language across all IBM environments, including CICS, Batch, IMS/DC and industry-standard database managers.

File Services, an option specific to the CICS environment, extends existing file services and supports DL/I and DB2 environments.

Enhancements include ESW support for all languages and environments and the execution of high-level assembler programs under ESW Testing for Assembler.

Prices for the product range from \$21,000 to \$146,500.

► *Viasoft
(602) 952-0050*

IMRS, Inc. has announced the Hyperion Developer's Toolkit, a set of high-level programming functions that offer open access to Hyperion, the firm's financial information management application.

According to the Stamford, Conn., company, users can create custom applications that interact with Hyperion or link Hyperion to existing third-party applications.

Functions for the tool kit include: updating Hyperion with data from non-IMRS applications, formatting data to move between Hyperion and other applications, allowing access to Hyperion's application processing and maintaining data integrity.

The Hyperion Developer's Toolkit can be licensed for \$15,000.

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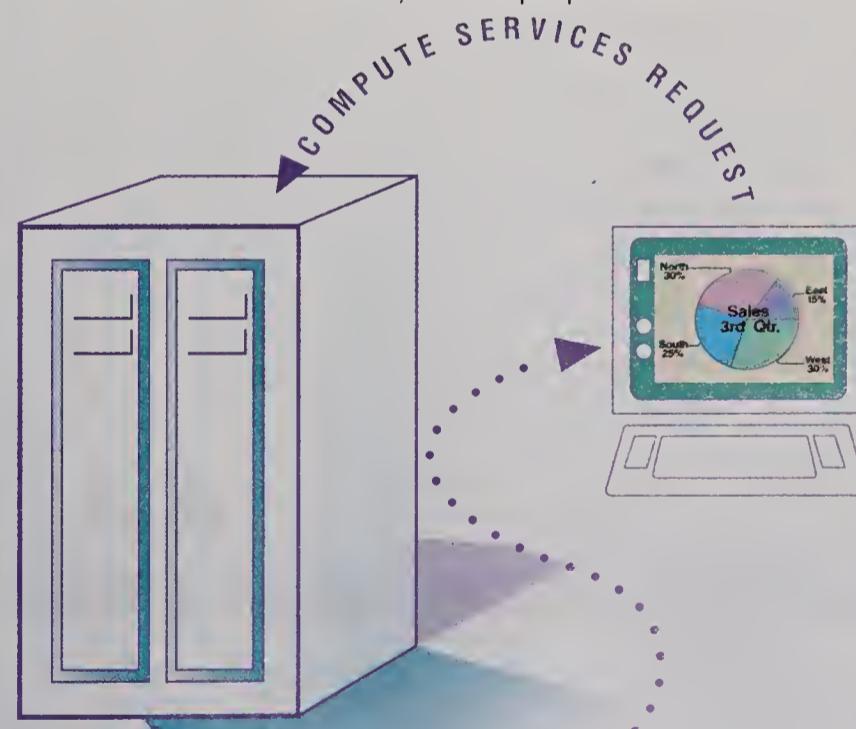
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- Platforms: Windows, Macintosh, OS/2, UNIX, Alpha
- User Interfaces: Windows, Motif, Macintosh, Character Mode
- Networks: Netware, LAN Manager, TCP/IP

KEY CLIENT/SERVER TECHNOLOGIES

- Graphical User Interfaces (GUIs)
- Event-Driven Applications
- Object Oriented Development

CLIENT/SERVER SOFTWARE TYPES

- Database Management Systems
- Network Software
- Tools: CASE, Application Development, and End User
- Application Packages

SELECTED CLIENT/SERVER STANDARDS

- ANSI ISO SQL is the industry standard for RDBMS access
- OSF DCE defines specifications for distributed computing, including remote procedure calls, directory services, and security services
- X/Open's XA interface defines a standard interface which provides interoperability between heterogeneous transaction processing monitors

THE NEW WAVE OF CLIE

PILOT CLIENT/SERVER



(1) Client/Server is the dominant deployment architecture for information systems in the 1990s. During the first phase, in the mid 1980s, organizations began evaluating client/server computing, by building prototypes and simple systems to validate the concept. This typically consisted of a small number of homogeneous clients connected to a server for file and print sharing.

DEPARTMENTAL CLIENT/SERVER



(2) In the late 1980s, as the price/performance and benefits became apparent, Fortune 1000 organizations began deploying client/server applications at the departmental level. LAN-based computing became pervasive and provided the impetus to a host of new technologies, including GUIs, RDBMs, and powerful Unix servers. The typical configuration for these early decision-support systems was PC LANs connected to a departmental server.

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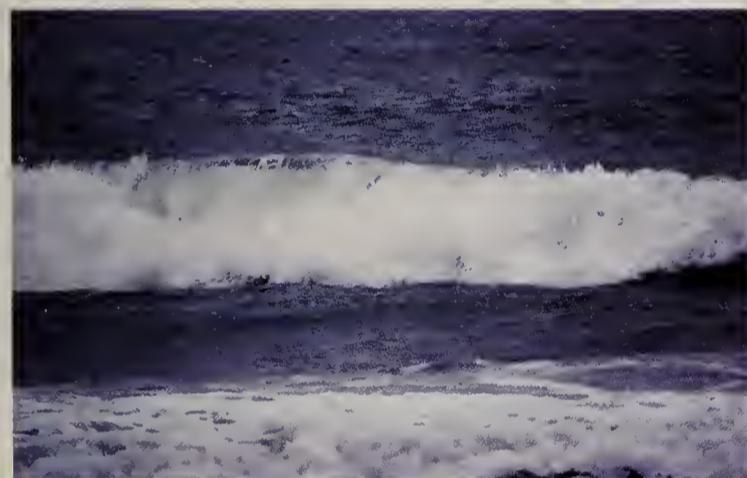
DISTRIBUTED CLIENT/SERVER



In the early 1990s, standards for distributed computing evolved and the underlying client/server technologies stabilized. Early departmental systems expanded to include data sharing with mainstream business applications. Distributed client/server systems consist of a large number of heterogeneous clients, connected to multiple servers across multiple networks, including access to legacy data.

(3)

ENTERPRISE CLIENT/SERVER



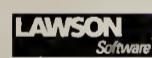
This is the era of enterprise client/server systems when mission-critical applications begin to move off the mainframe. These larger and more complex systems will spur the development of new client/server technologies and bring to the forefront issues such as system administration, performance tuning, security, reliability and interoperability.

(4)



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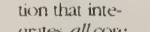
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**CIOs ARE LEARNING
SOME HARD LESSONS
ON THE ROAD TO TOTAL
QUALITY MANAGEMENT**

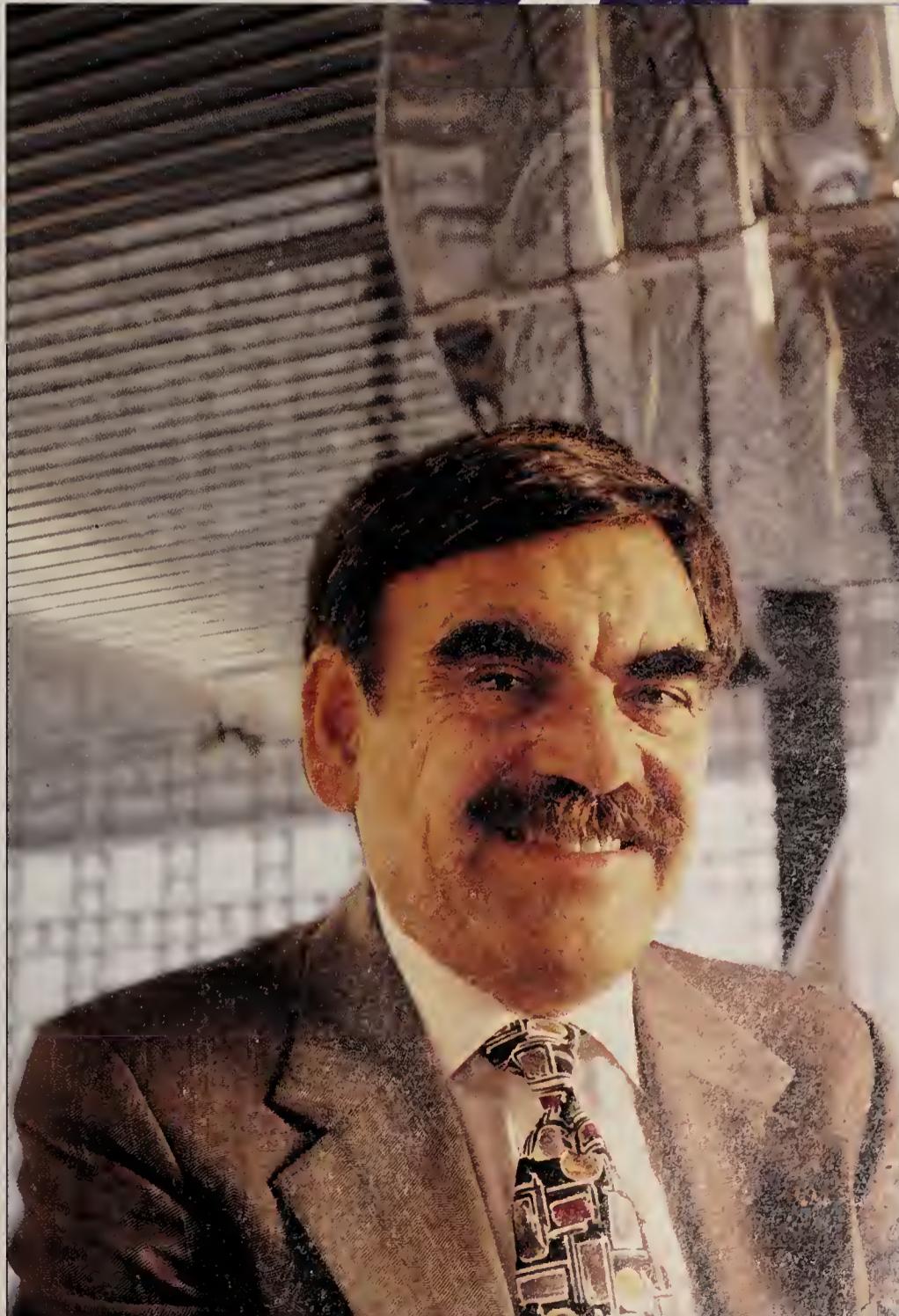
BY AMY BERMAR

“Q

uality on trial.”
“TQM: Is it dead or alive?”
“Are we falling out of love
with TQM?”

When titles like these begin popping up on books, articles and conference sessions, it's clear that the bloom is off the rose with total quality management (TQM).

Virtually every organization rolling out a quality program has encountered significant frustrations along the way. Information systems managers such as Patt Fantetti, vice president of development services at the First National Bank of Chicago, have suffered repeated setbacks. Top IS executives such as Corning, Inc.'s Harvey Shrednick or Bose Corp.'s Warren Harkness have found themselves face-to-face with unexpected



► Corning's Harvey Shrednick: Customers should be the judge of a TQM program

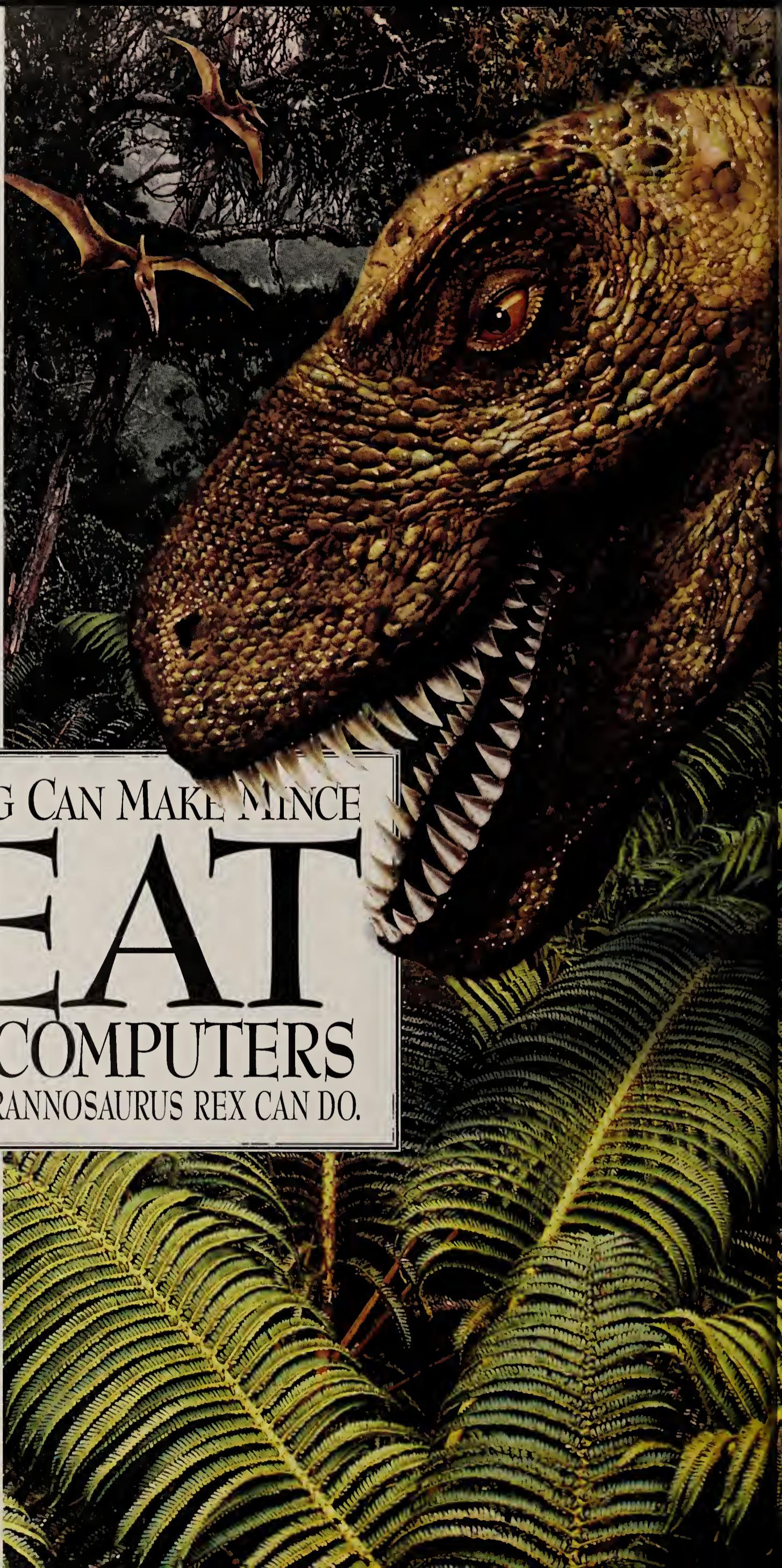
TQM, page 100

BOB PROLYN, NABA

Even dead, they're trouble. ♦

Dr. Jack Horner will tell you that. He's the man whose research brought the monstrous dinosaurs back to life in the hit movie *Jurassic Park*. And more than once, he recalls, he nearly lost the fight. ♦

"How did dinosaurs run?" the Montana paleontologist asks. "How fast did they grow? How long did they live? We would have been short of answers without some very sophisticated statistical



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analyses and three-dimensional imaging." ♦ All of which pit the fearsome beasts against Sun™ workstations. ♦ Using images, Dr. Horner was able to envision the eyes, ears, nose, and brain structure of the long-extinct lizards. He





was also able to look at them three-dimensionally, right on the screen, from every conceivable angle, testing theory against fact. ♦ Using Sun, Dr. Horner was soon able to pin dinosaurs down, quantifying how well they could hear, even how they sounded. ♦ And what might a dinosaur say, should one meet you? ♦ Mostly, a kind of growling. ♦ "They weren't very intelligent," Horner says. ♦ But they were pretty hungry. ♦ Sun computers. Just the thing to handle a towering lizard, or whatever monstrous task you're facing. ○ More than one million people are using Sun systems, powered by the SPARC® chip and the Solaris® operating environment, to gain a competitive advantage. Jack Horner is just one. To learn how you can benefit, call 1-800-426-5321, ext. 605.



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CONTINUED FROM PAGE 97

and unpleasant surprises.

But because these leaders have persevered with their TQM programs for many years, TQM still has the allegiance of many in the IS community. For every study that questions the value of TQM, another shows it provides a payback (see chart at right).

The question is not whether TQM works but whether a company adopting TQM can avoid the traps and mistakes others have made—and learn from its own experiences and errors.

Tackle specific processes

The Charleston Area Medical Center in Charleston, W. Va., has implemented several quality-improvement projects since 1992. While most have been successful, one sticks out as a failure in the mind of its chief information officer, Charles M. Jones. That was a quality-improvement team that was meant to identify and propose solutions to the difficulties of managing the center's three hospital complexes as a single unit.

It was "too large and complicated an issue for a quality action team to address and resolve," Jones says. By contrast, the successful teams tackled such concrete processes as improving the annual budget development process. Some issues are better left to the regular management decision-making process, Jones says.

Avoid 'sloganeering'

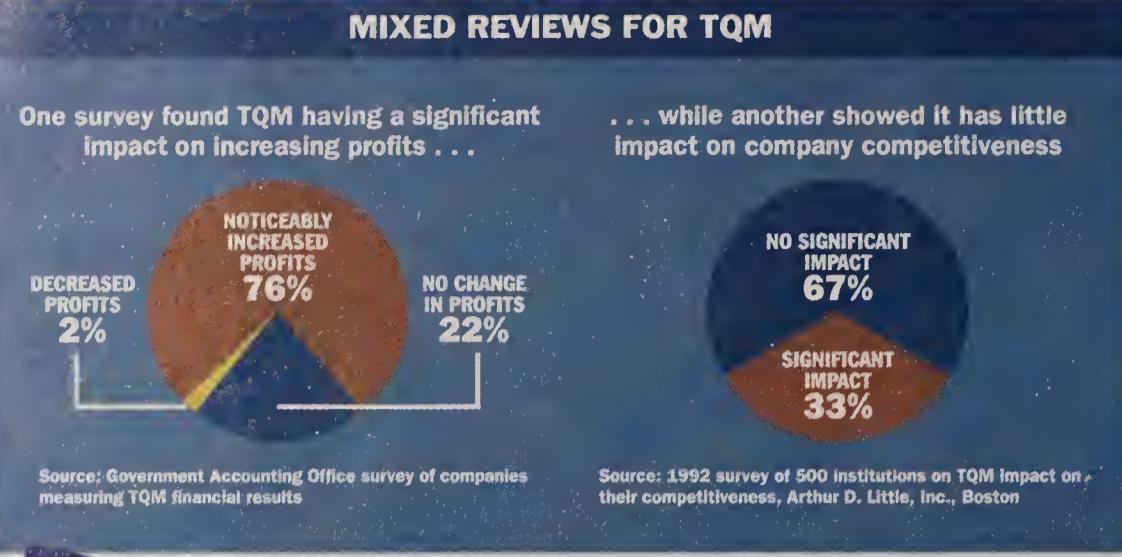
Jones says he is proud of one error he helped the medical center avoid: too much flag-waving for TQM. "I've seen programs rolled out with banners and slogans and logos posted everywhere. That tends to place too much identity on the program itself, instead of on the underlying values."

Jones persuaded the company's quality steering committee to avoid emblazoning memos and letterhead with catchphrases like "Quality counts!" In fact, center executives deliberately chose *not* to call their program a TQM program. "We even dropped the term quality and called it continuous improvement to get away from slogans and banners," Jones says.

Employee resistance

Even when programs are under way, employees can sabotage efforts to revamp outdated work processes.

First National's Fantetti discovered this the hard way. As part of the bank's TQM effort, he tried to



launch a function-point metrics program as a way of measuring the productivity of his software development staff. He ran head-on into unexpected opposition from programmers, analysts and mid-level IS managers.

In retrospect, Fantetti says he

LESSONS FOR IS EXECUTIVES

Here's some advice from two CIOs who have lived through a TQM effort:

GOOD MOVES

- ✓ Help provide an enterprise-wide perspective to the TQM effort.
- ✓ Volunteer at the outset. Don't wait for someone to ask you to be involved.
- ✓ Be a consensus-builder in the corporate effort, a catalyst rather than a driver.
- ✓ Be a leader for the IS staff. They will be watching to see if you really support the process or just give it lip service.
- ✓ Become a resource for the quality teams in resolving cross-functional conflicts.
- ✓ Get the IS staff [your people] trained in the quality process. Many of the skills used in systems analysis will translate well.
- ✓ Be realistic with the time frames that you set. People will lose interest if a task can't be accomplished in six months or less.

BAD MOVES

- ✗ Don't try to control information production and use. Encourage end-user access to information, off-the-shelf software, etc.
- ✗ Don't allow IS to be a bottleneck at the implementation phase. Anticipate recommendations to re-engineer systems or support streamlining efforts.
- ✗ Don't be an obstacle to the TQM effort. Look for opportunities to change "can't be done" to "can do."
- ✗ Don't promise more than you can deliver.
- ✗ Work with your people to avoid the "not invented here" attitude.
- ✗ Don't permit the overinvolvement of just one or two individuals in the IS department.

Source: David Loebig, CIO, Owen Healthcare, Inc., Houston; Charles M. Jones, CIO, Charleston Area Medical Center, Charleston, W. Va.; College of Healthcare Information Systems Executives, Ann Arbor, Mich.

member to another.

Perhaps the most common complaint from senior management, as well as the rank-and-file employees expected to change their work habits, is that quality takes so long to achieve.

"Companies are looking for the quick fix," says Rick Swanborg, principal at Ernst & Young's Boston-based Center for Information Technology and Strategy. Managers "have a year to make change happen and want to go out and find the best practice that will make things better."

TQM requires cultural change, and "you don't reculturalize a company in a year," says Bose's Harkness, director of corporate IS at the \$450 million audio manufacturer in Framingham, Mass., and one of the profession's more visible advocates of TQM.

"It wasn't until I got personally involved in meeting, teaching, doing and advising quality teams . . . [that I] more clearly understood the realities of implementing a TQM program," Harkness adds.

The big picture

Lack of executive leadership is often blamed as the primary reason why TQM programs fail. But sometimes programs fail because leaders are too successful inculcating TQM, and the drive for quality becomes an end instead of a means. This prompted a new chief executive officer at Florida Power & Light Co. to pull the utility's award-winning TQM program.

IS organizations have their own variation on this theme, Harkness says. They can become so obsessed with satisfying their customers that they're reluctant to risk projects based on emerging technologies out of fear that satisfaction ratings will dip. And that's a big mistake.

"The customer is looking for technical leadership," he says. "That's the bottom line. Sometimes you can overemphasize the quest for customer satisfaction and not focus on your core business."

Similarly, adhering strictly to the TQM doctrine of one particular TQM guru can lead to a dead end.

Senior management at Owens Healthcare, Inc. in Houston searched for the definitive quality program. But like others who have sought a TQM Holy Grail, "we found that there was no one system that seemed like a good cultural fit. We ended up hiring a local consultant and cutting and pasting from the best of what we had seen," says David Loebig, CIO of the pharmacy management firm.

Bernard is a free-lance writer in Newton, Mass.

Minority hiring getting more attention, help

By Jean S. Bozman

Federal requirements and greater appreciation of the value of a diversified work force have made minority hiring a priority in the 1990s. Fortunately, there are resources available to information systems managers looking to hire minorities.

Helping to tap the pool of minority group professionals are on-line databases and electronic job postings that are replacing traditional career fairs and resume books.

Large corporations can sign up for access to on-line databases, which hold thousands of names and post jobs electronically. These databases are used by several large corporations, including IBM, Hewlett-Packard Co., Digital Equipment Corp., AT&T, Allstate Insurance Co., Kraft General Foods and Amoco Corp.

A number of recruitment resources are provided by professional organizations with minority group membership. Several national organizations maintain on-line databases, including the Black Data Processing Associates (BDPA), the National Urban League, the National Society of Black Engineers and the National Black MBA Association (see chart at right).

Seeking consultants

IS managers are also turning to diversity consultants to hire a more balanced work force for their information technology operations and software development staffs.

The reason, management consultants say, is that the labor pool is changing, becoming a broad mixture of various ethnic groups and age brackets.

Many diversity consultants are independent advisers, prepared to offer in-house seminars and to advise management on diversity hiring resources. But equally important, they offer advice on management issues associated with having a diverse work force.

"I think there's been persistent pressure for corporations to diversify, to look for different human resources," says Antoinette Malveaux, director of operations for the National Black MBA Association in Chicago. "Diversity managers are being appointed, diversity task forces are being put in place, and companies are thinking about what their work force will look like in the year 2000."

Interest in diversity hiring has also picked up because of global competition. In a multicultural world, having a multicultural work

force is viewed as an asset.

IS shops in corporations that are federal contractors face an additional challenge: The government requires good-faith efforts to employ a work force reflecting the regional labor pool.

Managers in such firms must hire employees that represent the ethnic mix in their community, as shown by Department of Labor statistics.

"The demand for a diversified work force is written on the wall," says Ollie Morgan, president of the Chicago chapter of BDPA, a national group for minority information technology professionals.

"The most progressive companies have developed relationships with associations to assist them in finding a diverse group of candidates," Morgan says.

"Typically, there's a plan in place that says an organization wants to identify and attract qualified candidates with a variety of backgrounds," says Jeff Loehr, director of human resources at Informix Software, Inc. in Lenexa, Kan.

Stuck in a traditional rut

But many companies still have trouble breaking away from traditional hiring practices to attract a more diverse employee base.

"Many companies have been going after their traditional sources for recruitment," notes diversity consultant Linda G. Cooper at LGC & Associates in Kansas City, Mo. "They may be looking for people who talk like they do, who went to the same schools they did. It does

require time and money to identify talented people for a diverse work force."

Hitting the books

Job candidates must also keep up their skills, notes Timothy Wilson, president of T. A. Wilson & Associates in Northboro, Mass.

"I talk about being as multifaceted as possible," he says, "so that [candidates will] be prepared for the next technology changes."

For example, computer programmers and systems analysts must make a point of learning about client/server and object-oriented technology, as well as traditional programming languages such as Cobol.

Malveaux notes that a recent survey of the National Black MBA's 3,000 members nationwide showed they are interested in career programs to combat the recent recession. Many attend national conventions and career fairs and try to network with other professionals to find new jobs.

Once a diverse work force is in place, management policies must be refined to support workgroup conflicts and communication problems that may arise.

"You have a work force that has been, for the sake of argument, all green, and people have not known how to deal with yellow, blue and red," said Norris Hite, publisher of the National Society of Black Engineers' magazine in Alexandria, Va. "Mind-sets have to change all the way down the line because managers are used to managing people who look like them."

Executive Track

AT&T has announced the appointment of James L. Zucco Jr. to a new position as chief information officer for its Business Communications Services unit. He was senior vice president of strategy and technology at MCI Communications Corp., and earlier he was in a senior management position with Nolan, Norton & Co., a consulting firm with offices in Boston and London.

As CIO, Zucco will lead the information management activities for Business Communications Services and help leverage its information assets to increase customer satisfaction and shareholder values.

He will report to John C. Petrill, president of Business Communications Services, which serves the global business long-distance market, and Ron J. Ponder, AT&T senior vice president and CIO.

Zucco's appointment is the third by

AT&T this year in its effort to make innovative use of advanced information technology to enable its communications services employees to be more effective in their work with AT&T's customers, suppliers, alliance partners and with each other.

Also hired recently in this effort were Alan G. Jones, formerly vice president and CIO at Tektronix, Inc., who was named CIO for AT&T's Customer Communications Services unit; and Ponder, formerly executive vice president and CIO at Sprint Corp.

Avis, Inc. has appointed Frank Notarstefano director of systems development for the WizCom International Ltd. subsidiary. Notarstefano will coordinate all development for the subsidiary, which provides reservation services and a variety of other electronic systems products and programs to the hotel and car rental industries.

Notarstefano joined Avis in 1989 as a

systems manager in information services.



Kailash C. Khanna has been named the new head of global information technology at the Society for Worldwide Interbank Financial Telecommunication.

Khanna will direct all systems staff at the company's headquarters in Belgium and in the U.S. Previously, Khanna served as senior vice president of systems and technology at the CIT Group of Manufacturers Hanover Trust Co.

David B. Cameron has been named CIO at Trivest, Inc. in Coconut Grove, Fla.

Cameron joined the \$850 million investment firm from Wackenhut Corp., where he was vice president of information systems.

Michael J. Dooling has joined Witco Corp. as director of the chemical manufacturer's information technology center in Woodcliff Lake, N.J.

Dooling will be responsible for end-user computing, emerging technologies and IS quality assurance. Prior to joining Witco, Dooley was a group manager at PepsiCo, Inc.

Paul A. Brands has been named chief executive officer at American Management Systems, Inc. in Arlington, Va. Brands succeeds Charles O. Rossotti, who will remain as chairman.

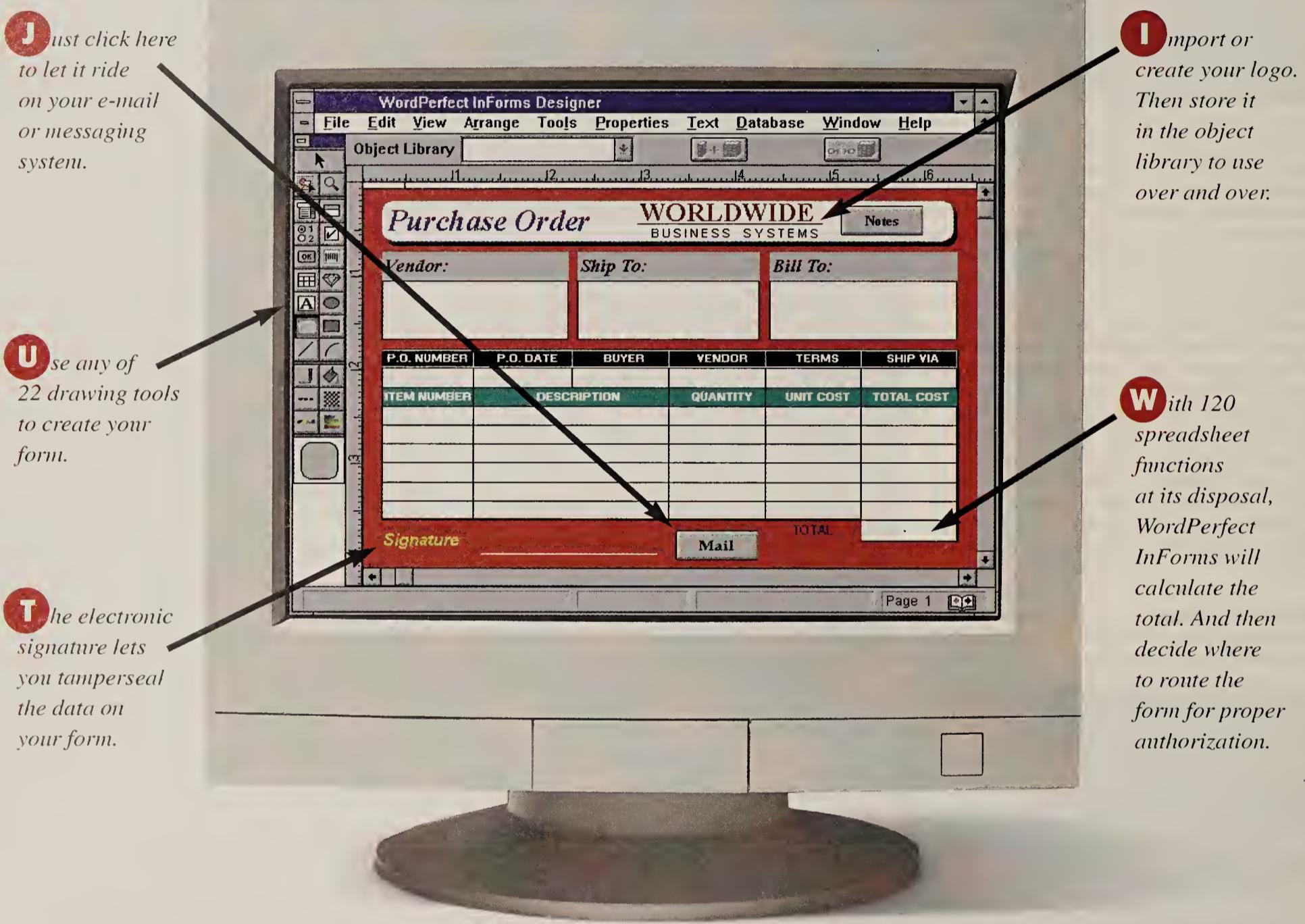
Brands also serves as the company's vice chairman and will concentrate on day-to-day operations.



Texas Instruments, Inc. has named J.R. (Bob) McLendon vice president and manager of its global IS and Services Division, at its Dallas headquarters.

McLendon, who joined Texas Instruments in 1966, is responsible for the company's worldwide computer and communications network and MIS, computer-aided design automation and manufacturing automation.

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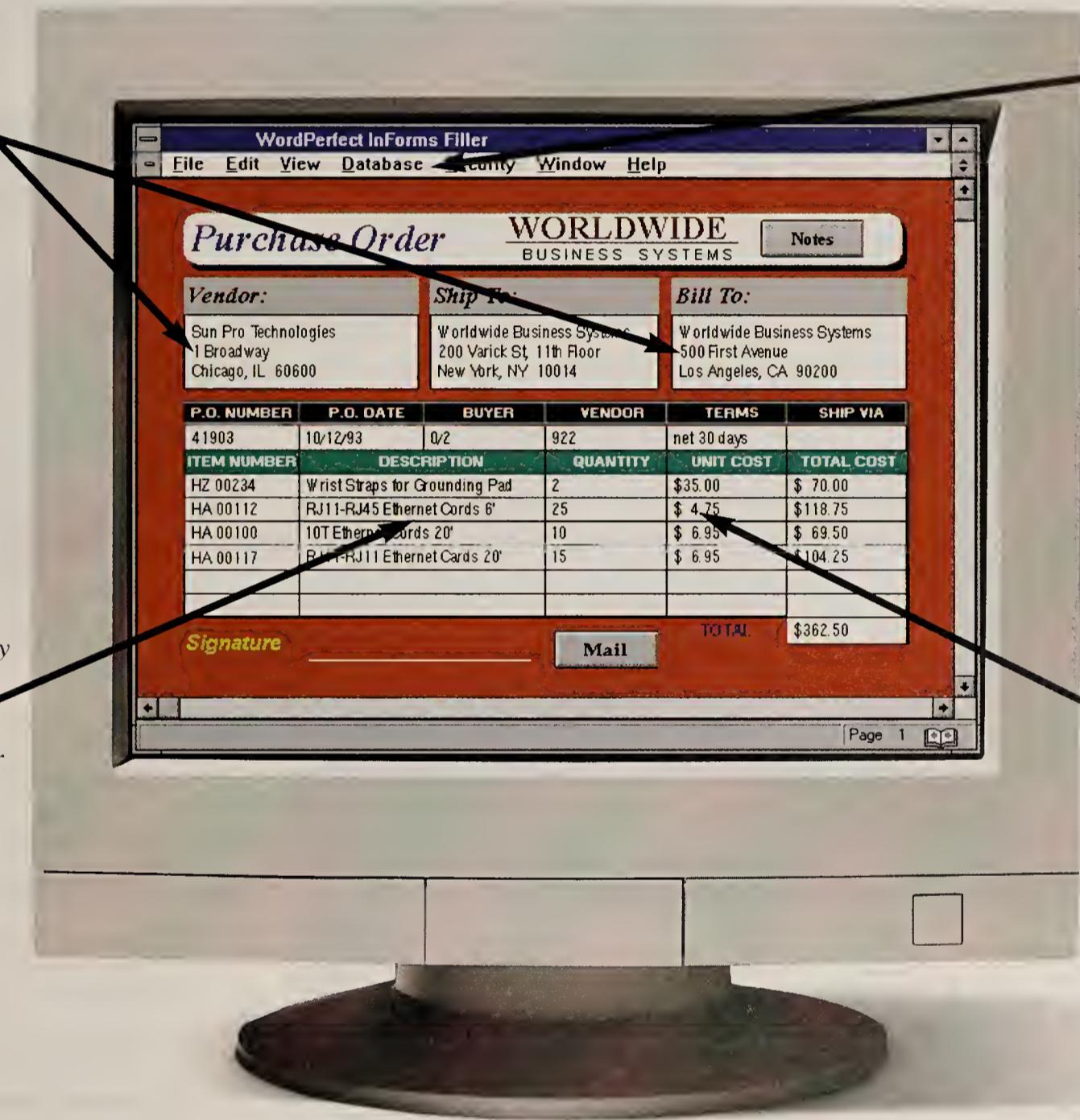
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Calendar

NOV. 14-NOV. 20

Xplor '93. Denver, Nov. 14-19 — Contact: Xplor International, Torrance, Calif. (310) 375-4240.

Comdex/Fall. Las Vegas, Nov. 16 — Contact: Kimberly Companion, Micrografx, Inc., Richardson, Texas (214) 994-6413.

NOV. 28-DEC. 4

E-Comm '93. Atlanta, Nov. 29-Dec. 1 — Contact: E-Comm '93 Conference, Dallas, Texas (214) 424-0562.

Fourth Annual Computer Fax Conference. Monterey, Calif., Nov. 30-Dec. 1 — Contact: BIS Strate-

gic Decisions, Norwell, Mass. (617) 982-9500.

DEC. 5-DEC. 11

Database Marketing Conference & Exposition. Orlando, Fla., Dec. 5-7 — Contact: The National Center for Database Marketing, Stamford, Conn. (212) 972-2410.

Lotus Notes Users Conference. Lake Buena Vista, Fla., Dec. 5-9 — Contact: Lotusphere '93, Sudbury, Mass. (508) 443-1457.

Computer Measurement Group (CMG): Managing the Wave of Technology. San Diego, Dec. 5-10 — Contact: Computer Measurement Group '93, Chicago, Ill. (708) 655-1812.

Wireless Datacomm '93. Washington, Dec. 6-8 — Contact: Communications Events, Inc., Norwalk, Conn. (203) 847-5131.

"Outsourcing the IS Function." San Francisco, Dec. 8-9 — Contact: International Quality & Productivity Center, Upper Montclair, N.J. (201) 783-4403.

The Outsourcing Conference: "Opportunities, Strategies, Realities." Boston, Dec. 8-9 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Database World. Chicago, Dec. 8-10 — Contact: Digital Equipment Corp., Andover, Mass. (508) 470-3880.

DEC. 12-DEC. 18

Lap and Palmtop Exposition and Conference. Toronto, Dec. 13-14 — Contact: Laptop Expositions, New York, N.Y. (212) 682-7968.

JAN. 9-JAN. 15, 1994

ObjectWorld. Boston, Jan. 10-13 — Contact: World Expo Corp., Framingham, Mass. (508) 879-6700.

JAN. 16-JAN. 22, 1994

Client/Server Conference & Exposition. San Jose, Calif., Jan. 18-21 — Contact: CMP Conference & Exhibit Group, Manhasset, N.Y. (516) 562-7460.

JAN. 23-JAN. 29, 1994

ComNet '94. Washington, Jan. 24-27 — Contact: World Expo Corp., Framingham, Mass. (508) 879-6700.

JAN. 30-FEB. 5, 1994

Executive Technology Summit '94. Tarpon Springs, Fla., Feb. 2-4 — Contact: ATI Travel Management, Chicago, Ill. (312) 644-6642.

FEB. 6-FEB. 12, 1994

Building Enterprise Architectures. Washington, Feb. 8-10 — Contact: Technology Transfer Institute, Santa Monica, Calif. (310) 394-8305.

FEB. 13-FEB. 19, 1994

SIGDA: Workshop on Field Programming Gate Arrays. Berkeley, Calif., Feb. 14-15 — Contact: Association for Computing Machinery, New York, N.Y. (212) 944-1318.

The Sixth Annual Software Support Conference. San Francisco, Feb. 14-16 — Contact: Jan Rosenthal, Institute for International Research, New York, N.Y. (212) 661-3500.

Distribution/Computer Expo '94. West Irvine, Calif., Feb. 16-17 — Contact: C.S. Report, Uwchland, Pa. (215) 458-6410.

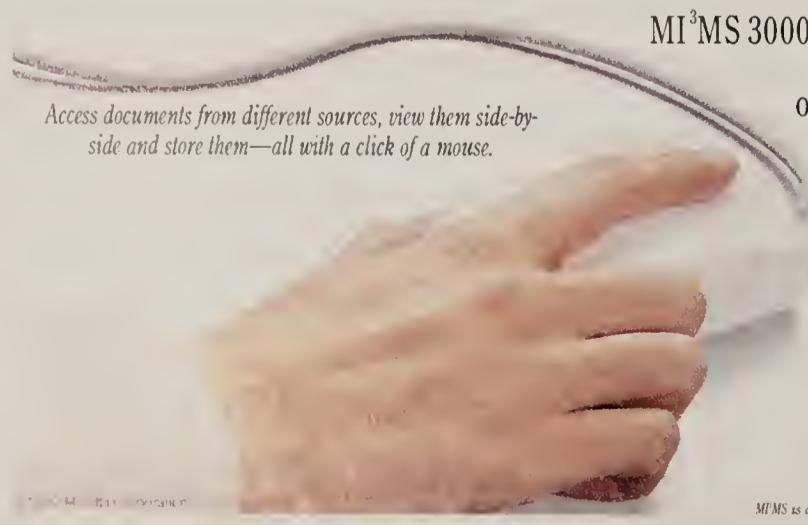
Concepts '94. Orlando, Fla., Feb. 16-19 — Contact: Graphic Arts Show Co., Reston, Va. (703) 264-7200.

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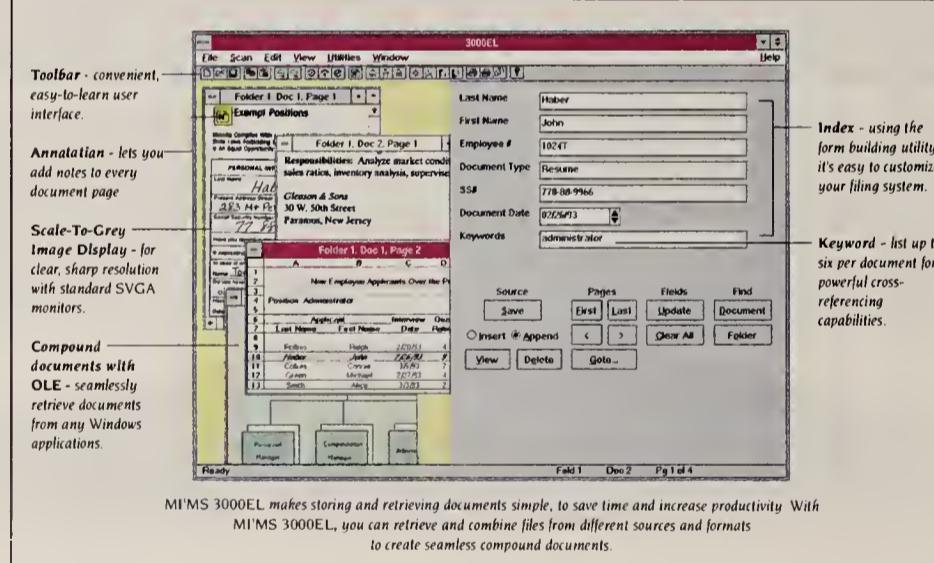


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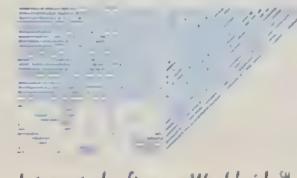


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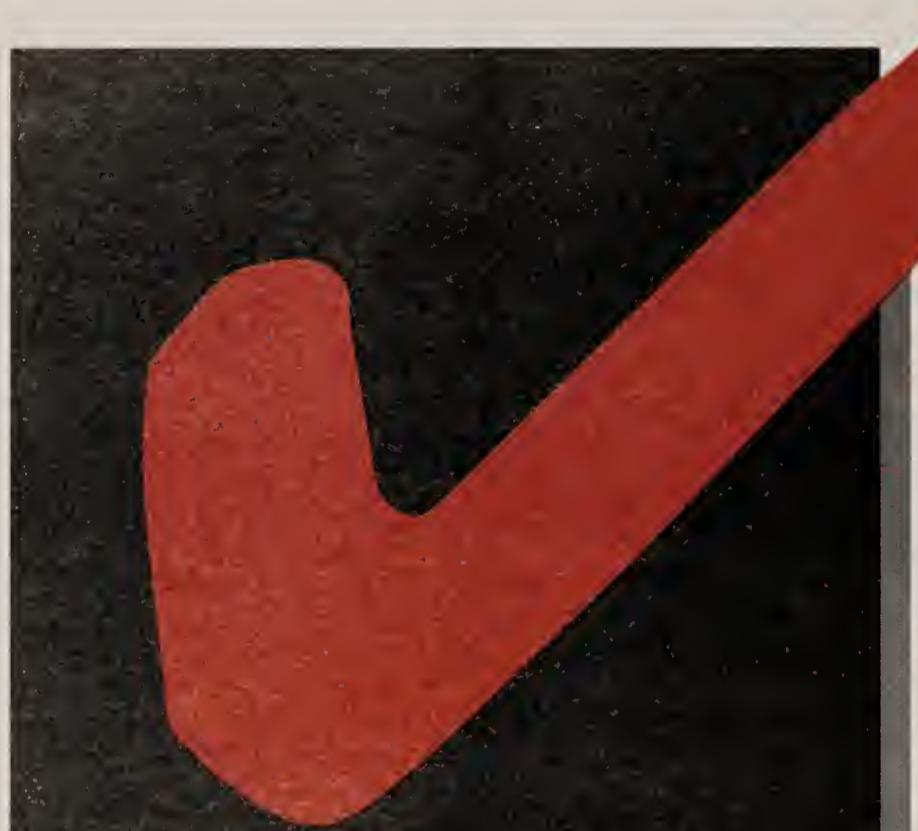
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The CW Guide to Client/Server Financial Software

BEAN COUNTERS BEWARE

BY JULIA KING

Slowly,

plication and a couple dozen people at a time.

The 25 users in the asset-management department, who will soon have 486-based PCs on their desks, will be able to use up-to-the-minute accounting data to do analysis, without the help of the information systems department. The application logic will reside on a Hewlett-Packard Co. HP 9000 server that will run a Sybase, Inc. database.

At Fedex and other Fortune 1,000 companies, accounting applications are no longer regarded as "untouchable." But even though this grandfather of systems is under strong consideration for dismantling and relocating to smaller and more accessible platforms, many companies are hesitant to entrust it to the current batch of mostly unproven client/server financial software just coming on the market today.

The fact is, most companies are more interested in testing the waters with pilot projects and small sample applications. "The major shift will occur toward the end of 1994 and into 1995," says Tony Percy, vice president of software management strategies at Gartner Group, Inc. in Stamford, Conn. "It will become more mainstream when there's more clarity in the market."

"We're starting...with the idea that you

King is a free-lance writer in Ridley Park, Pa.

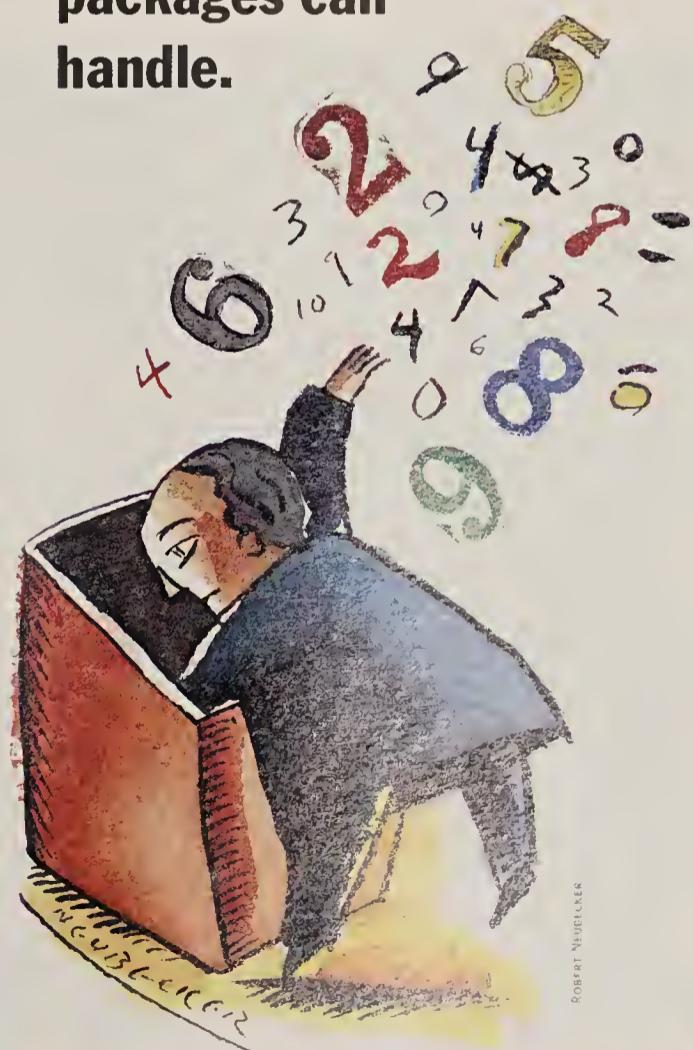
Federal Express Co. is moving all of its mainframe financial applications to a Novell, Inc. NetWare LAN. Slowly, as in one application and a couple dozen people at a time.

learn from experience," says David Klimetz, manager of Fedex's financial control system. "You pick one thing, concentrate on it and do it well." Fedex is a beta site for Dun & Bradstreet Software, Inc.'s client/server-based Financial Stream system, which D&B started shipping in September; all modules are expected next year.

The impetus for a move to client/server accounting is undeniably strong. With up-to-the-minute accounting information, managers could identify new markets, forecast global

Bean counters, page 108

CFOs want to analyze real-time accounting information. Client/server applications promise to get them there. But uncertainty abounds, especially in the areas of cost, security and the volume these packages can handle.



inside



What's real,
what's not
in vendor
claims.
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Financial
functions good,
security lacking,
say users of
PeopleSoft
Financials.
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Lawson
scores highest
of Unix
financial
players.
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Bean counters

CONTINUED FROM PAGE 107

buying and selling trends as well as produce management reports as business needs dictate, not as mainframe schedules allow.

In addition, the built-in tools these applications provide allow users to customize their own reports, create one-of-a-kind financial summaries and perform ad hoc queries. Some vendors offer proprietary tools, but some packages use Microsoft Corp.'s Visual Basic and Access programming languages or Powersoft Corp.'s PowerBuilder fourth-generation language.

"The focus of most financial systems in place today is to store information," says Brian Sommer, director of software intelligence at Chicago-based Andersen

Changing financials

Of 100 Buyers' Scorecard respondents, almost half are re-engineering or downsizing their financial applications

What is the status of your financial applications?

Re-engineering with new requirements and functionality	33%
Downsizing to maintain the status quo on a smaller platform	11%
Not changing the applications at all	33%
Other	23%

Source: Buyers' Satisfaction Scorecard

Competition is fierce in the booming market for client/server financial software. But the marketing campaigns are even fiercer. It's important to look beyond the vendor claims to see what the promises really mean.

"We have the first true client/server financial software."

This is a very easy claim to make—and justify—simply because so many models satisfy the technical definition of client/server. But most vendors support only one model. If a vendor says its product's application processing takes place on the client and the server, what does that actually mean? Can you split up the processing differently, moving more of it to the client? Or can you move all the processing to the server? You need to know where processing can take place in order to size hardware, assess network traffic and estimate the product's flexibility.

"We offer the only high-end solutions."

All vendors—from start-ups to legacy enders—are struggling to get high-end

Consulting. "But you don't run a business by looking in the rearview mirror. What users want now are management-reporting systems to run the business and not to satisfy auditors."

Slow to make a move

But there are solid reasons for the slow migration. Much of the explanation lies in the user sites. "Users are wildly confused about what's happening and what the vendors are telling them," Percy says. "Some just think they should get off the mainframe. Others are drawn to the PC front end. Some want open systems and are heading for Unix. Another direction is relational databases to get to a more strategic platform."

The trouble is that it's very difficult to distinguish among vendor offerings. For one thing, many of the application suites have just started shipping this year, a couple of modules at a time.

PeopleSoft, Inc. will complete its suite in December; D&B is expected to finish shipping next year. SAP America, Inc. has released its applications, but few U.S. sites are using them. After two years of talk, the Dodge Group, Inc. said it will ship its system by first-quarter 1994.

Other notable midrange and mainframe vendors, such as Ross Systems, Inc., J. D. Edwards, Lawson Software Corp. and, next year, Walker Interactive Systems, Inc., are offering client/server versions as an option to early adopters.

Oracle Corp. is the market-share leader in Unix financials, but only a small portion of those 1,400 users are in client/server mode, according to Chris Roon, director of applications marketing.

And the vendors aren't offering much help in differentiating their wares. "They all say they'll be on the same platforms. But in actuality, they all have different strengths," Percy says. "For instance, what model of client/server are they us-

ing? To what extent are they optimizing the underlying database? To what extent are they going after the business process re-engineering crowd?"

Another reason for user reticence is the realization that distributed functionality and flexibility does not come cheap. An average system from Platinum Software Corp.—including general ledger, payables and fixed-asset modules to support up to 100 users—costs between \$200,000 and \$300,000.

This is not out of line with the cost of other accounting client/server packages, which generally are priced according to the number of system modules, number of users or both. Coda, Inc.'s Open Accounting System costs between \$30,000 and \$350,000 for a complete system supporting between eight and 64 users, according to marketing vice president Brooke Savage. PeopleSoft's suite costs between \$100,000 to \$300,000 per module.

Not so simple

The bottom line, says Heidi Dix, an analyst at Cambridge, Mass.-based Forrester Research, Inc., is that client/server "is definitely not as cheap as people think it's going to be." Moreover, there is no real pressure on vendors to lower their prices, she says.

Vendors say the up-front costs will reap big savings down the road. But the savings have yet to be proved in any quantifiable manner, says Belden Menk-

us, a Nashville consultant and editor of "Electronic Data Processing Audit Control and Security," a monthly newsletter.

"There's no real cost/benefit analysis being done," Menkus says. "Instead, everyone seems more enamored with the neat technology."

This neat technology, however, can actually slow down accounting processes. At Fedex, users exchange flexibility for slower response times, up to a few seconds. Then again, Klimetz says, "Client/server transactions do a lot more. You add an asset once and the application adds that asset to nine sets of books."

Under the previous IBM IMS system, the same asset would need to be entered five or six times.

There is also no way to tell at this point whether the client/server packages will handle the heavy-duty transaction volume now processed by mainframe systems, especially since users have mostly been implementing one module at a time.

"There are performance and volume issues that need to be addressed," Savage says. But these issues "have little to do with software and everything to do with network topologies and how servers are configured. If you throw enough hardware at the issue, you can solve the volume problems."

Hardware can do little to solve security threats, however. Under client/server solutions, PC-based users as well as other applications have access to financial

products out the door. But start-ups and PC vendors don't develop and offer the functions and features one would expect in a high-end solution. Legacy vendors have the functional experience, but they may lack significant LAN and PC skills.

To capture your attention, most vendors are focusing initial efforts on the user interface. Look beyond the gloss, but don't expect to see what you currently have in a more mature legacy system with these initial releases. Often lacking are international capabilities and batch-intensive processes such as allocations, year-end processing, journal entry interfaces and consolidations.

There is another implication for Fortune 500 or other high-end companies: performance. Many of these products will

go into full production at customer sites by the end of this year.

Performance capabilities and benchmarks will be unavailable until more companies with high-transaction volumes put these new packages to the test.

"Our software utilizes truly open technology."

"Open" is a loosely defined term. To many of our clients, "open" means the ability to plug and play any combination of relational

databases, network protocols and graphical user interfaces with the financial package they have acquired. In reality, many vendors use one developmental tool set. Some have chosen very exclusive uses of the tools that may preclude easy substitution of other products. Your

organization must develop or find the necessary skills to support the hardware and software environment the product requires.

.....

Although the first releases of client/server financial software may not meet your expectations, don't despair.

Thanks to development tools, you can expect new products and upgrades to this software much faster than in a legacy environment.

Additionally, vendors are teaming with experts to incorporate additional financial and industry-specific functionality into their products.

Finally, many vendors recognize the need to improve the performance and high-volume batch capabilities of their products in order to provide solutions for Fortune 500 firms.

Schuler is a manager in the Software Intelligence Group of Andersen Consulting, the \$2.7 billion international management and technology consulting firm. The group provides Andersen's financial competence and solutions expertise.



data in relatively open relational databases.

The idea of open access, explains Robert Crane, former editor of *Accounting Today*, is that accounting records are as current as the most recent entries on the system.

It's a great idea—in theory. "When you move off the mainframe, you lose some of your audit trail because you're putting input into lots of different hands," Crane says. "It's this kind of loss of control that scares the hell out of accountants."

Securing the system

Packages announced so far lean heavily on the back-end relational database to provide the security users want, says Jennifer Scholze, a software analyst at International Data Corp. in Framingham, Mass.

"There still aren't a great number of utilities and tools to address security, and this is one of the big reasons people are hesitant," Scholze says.

"Security and control are a double-edged sword," says Kevin Riegelsberger, executive vice president and co-founder of Platinum. "We want to open data and empower end users, but we want to make sure that end users get only the right data."

Like other observers, Riegelsberger notes that "companies have to institute their own security measures."

Some people are concerned enough about these problems that they're finding alternative ways to get the flexibility they need. "I think it's a lot of hype that client/server is cheaper," says Dennis Croft, director of IS at the state of Flori-

da's controllers office. "Our environment is the single system for corporate records of a \$33 billion corporation. I'm not convinced a client/server environment is the way to go with corporate financial records."

Because various state program managers need to make decisions based on mainframe data, Croft has opted to give users host-based query tools while keeping processing on the mainframe. This way, terminal users and PC users can have access to the data. Individual agencies will be given the means to develop unique applications and reports with Natural language tools.

Control and security are Croft's main concerns: "People need data and information. If you can give them that and still protect the application, that's the way to go."

Some companies are satisfied with downsizing to a Unix platform but keeping all processing and application logic on the server. Most of the mainframe and midrange vendors—including D&B, SAP, Lawson, Ross Systems, J. D. Edwards and Skylight Systems—have created Unix versions of their proprietary software. D&B anticipates that only 20% of its customers will move to true client/server in the next couple of years.

Client/server may seem to be the next wave for accounting, but today's leading-edge technology will pale in comparison to what's down the road, according to Andersen Consulting's Sommer.

In a year or so, Sommer says, client/server financial packages will include ties to electronic mail, imaging and work-flow systems. D&B has already progressed toward work flow, and PeopleSoft has announced support.

Vendors will also incorporate exception-based logic, which will automatically alert financial staff members to irregularities or other events requiring im-

mediate attention. The overall trend, Sommer says, is further integrating financial data with other business tools and processes.

"Right now, every product out there is GUI-based with an open SQL database and client/server architecture, and every vendor has the same message that they are God's gift to client/server and open systems," Sommer notes. But in a year or so, he says, the vendors that lead the pack will be those that fit their packages with enabling technology "to allow continuous re-engineering within the finance function."

"I think it's a lot of hype that client/server is cheaper. I'm not convinced it's the way to go with corporate financial records."

**DENNIS CROFT
IS director,
state of Florida**



Believe it or not, that's the jargon you'll run into when you start looking into client/server accounting products. Here's what it means.

If the system is built to accommodate most processing on the client, that's a "fat client" product. The "thin client" system puts most application logic on the server. This is a chief distinguishing factor among available packages.

A fat client system tends to require powerful desktop machines that are able to accommodate resource-hungry graphical user interfaces. Thin clients simply give a graphical look to server-based processing.

What's optimal is a system that allows the user to decide the most efficient platform for any given function. A function such as payroll calculations that requires sophisticated mathematical capabilities needs the support of a server. Less complex desktop integration functions, such as data analysis, should be placed on the client.

There are more nuances to the thin client/fat client debate. It's important to analyze vendor strategies to see where they stand.

Client/server players

Coda, Inc.
Manchester, N.H.

Computron, Inc.
Rutherford, N.J.

Dun & Bradstreet
Software, Inc.
Framingham, Mass.

FlexiWare Corp.
Shelton, Conn.

FourGen Software, Inc.
Seattle

Kapre Software, Inc.
Boulder, Colo.

Lawson Software Corp.
Minneapolis

Oracle Corp.
Redwood Shores, Calif.

PeopleSoft, Inc.
Walnut Creek, Calif.

Platinum Software Corp.
Irvine, Calif.

Ross Systems, Inc.
Redwood City, Calif.

SAP America, Inc.
Lester, Pa.

Open IAS

Epic

Financial Stream

FlexiFinancials

Enterprise

Kapre

Open Enterprise

Oracle Financials

PeopleSoft Financials

Platinum-to-Sequel

Renaissance CS

R/3 Financials

Since 1993

Since 1990

Half the modules began shipping in September; others to ship in 1994

Since 1993

Since 1990

Expected in 1994

Since 1993

Since 1989

Since 1992; most modules currently out; more due in 1994

Since 1993

Since 1993

Since 1992

Good international presence but small mind share in U.S.

Developed client/server applications from PC platform.

Built-in work-flow functions set products apart; will run only on Sybase.

CEO and other higher-ups are former Computer Associates executives; object-oriented from ground up.

One of the first to come out with client/server software.

Started by former J.D. Edwards executives; object-oriented from ground up.

Runs on Oracle, Sybase and Informix; aggressively moving client base to client/server.

Has the longest standing offering; requires Oracle database.

Can be more expensive than rivals because development tools and first-year maintenance are bundled; runs on Sybase and Oracle.

EDI functions expected to be added to financial packages 1994.

Bought client/server tools and packages from a UK firm last year; has also ported DEC-specific packages to Unix. Currently supports Ingres and Rdb, with Oracle and Sybase expected.

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PRODUCT CHECK LIST

The following checkpoints are provided by Tristan M. Hoag, a manager of the Software Intelligence Group of Andersen Consulting, which provides financial and human resources competence and solutions expertise.

What platforms does the package provide support for and how are they supported?

Support for multiple servers, operating systems, networks, graphical user interfaces and databases is widely advertised, but make sure the combination you need is available. Also, vendors support multiple platforms in different ways. Some vendors use a gateway product. These gateways can add processing steps, slowing performance in high-volume, multiuser environments.

How are server processes addressed?

Many of today's client/server financial software products are sold based on the attractiveness of the GUI. But what large organizations really need are industrial-strength, configurable and manageable server processes. Common routines, report programs, interfaces and large mass-maintenance routines are often placed on the server.

Most vendors do not provide tools to design, build, test and maintain server programs. Instead, they focus on client code such as basic inquiry and update processing. Large organizations often need to place routines either on the server or the client; however, most customization tools produce client or server code, but not both.

How is distributed code managed?

Vendors have not fully addressed this area. The frequent lack of this type of utility can create frustration. Ongoing maintenance and upgrade efforts are complicated by large numbers of client machines that must be updated, tested and maintained. Ask the vendor how it will help you manage products and versions over a distributed wide-area network, which could involve hundreds of client and server processors.

Will one version of the product run on multiple platforms?

Many large users need to standardize operations over a number of plants, companies and business units. When that's

true, it would be far easier to buy just one version of the product rather than separate versions for each platform.

Even if the same product runs on multiple platforms, however, the vendor may release one platform at a time, which will exacerbate your update and version control headaches. If portability is provided by a certain database or tools vendor, you must also consider its platform direction and release schedule.

There's another important point when

dealing in multiple platforms. In their decision to focus on high performance, some vendors use stored procedures in the database management system to accelerate data access. This works well. However, different DBMSs have different methods of handling and developing stored procedures.

If financial software vendors wish to support multiple platforms, they must rewrite much of the stored procedure code on the server.

Can report writers, etc. easily access the data maintained by the application?

If you plan to integrate an end-user report writer, spreadsheet or executive information system with your new financial system, make sure the vendor has not limited access to the data maintained by the application.

Find out whether you must use the vendor's special software routines to access and update data.



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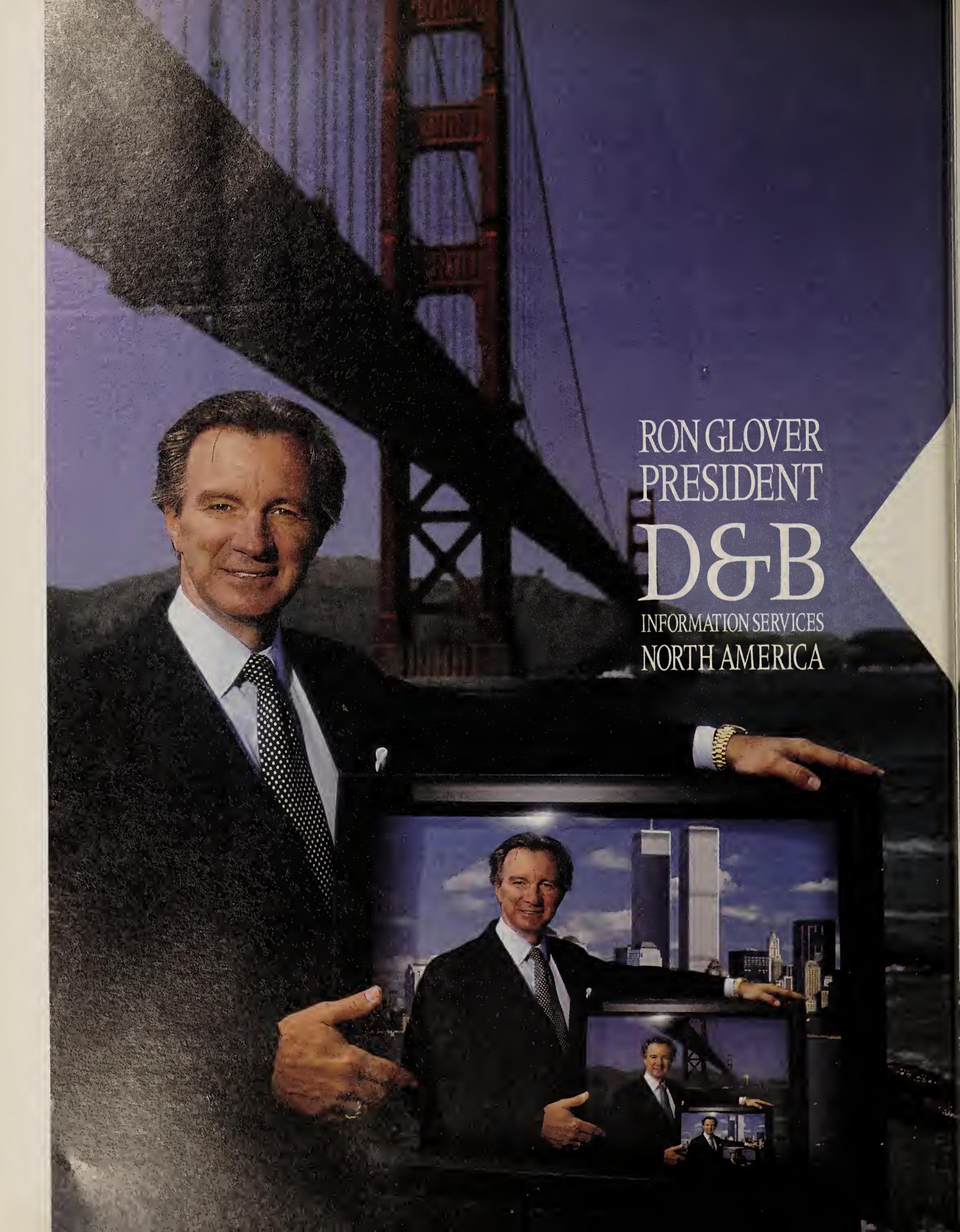
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C A S E
STUDY

UCLA medical school finds right elixir

As information systems director Stephen Berry tells it, the one good thing to come out of a devastating fire two years ago at UCLA's Department of Medicine was a chance to redesign the department's cumbersome financial system.

Financial data had been maintained on the university's central system. To access that information, users had to

download mainframe data to a terminal and then manually retype the information into the department's multiple databases. This unwieldy process was performed once a month, which made it impossible to stay current on funds the university had committed to the department.

However, the department's two VAX-

based databases, the Unix workstation-based general ledger database and all the custom financial applications went up in flames, along with the cabling system that linked the department's five buildings.

When it came time to rebuild, Berry envisioned a single database that the department's 250 PC and Macintosh users could access. In addition, he wanted to create a transparent link to the campus mainframe-based financial system, which maintained a separate, centralized record of the accounting activities.

Berry's team began by networking the five buildings' systems to one file server and one Sybase, Inc. database server. Then, using Powersoft Corp.'s PowerBuilder development tools, they custom-built clinical income, payroll and personnel applications.

Reasoning that they were programmers and not accountants, the team decided to purchase — rather than build — a client/server general ledger system. Their choice: FlexiWare Corp.'s Flexi-Ledger.

Flexibility comes first

Berry picked FlexiWare because it worked with his custom front-end interfaces and third-party application development tools, rather than those offered by the vendor. In addition to PowerBuilder, for example, Berry uses FormFlow, a forms processing package from Delrina Technology, Inc., a Canadian software vendor. FormFlow scans in the department's paper forms, adds necessary fields and points them to the database.

"We used [FlexiWare] as our core system on our database server, but we could define the roll-up structure we wanted and their system would maintain that structure," he notes.

Berry says client/server in general and FlexiWare in particular have helped to rectify many of his department's problems. For example, downloads from the campus mainframe are now much smoother and can be performed daily instead of monthly, which lets the department commit funds to its general ledger system in almost real time.

The client/server implementation cost less than \$1 million and took a little over a year and a half. Berry says that time frame could have been shortened because his team expected that the network design and implementation would be quite complex. "We didn't really begin application development until the network was finished," Berry explains.

In practice, the networking effort was not that complicated. Next time, he says, "I would undertake network and application development simultaneously and bring the system on-line even faster."

Now, less than two months after the UCLA system went on-line, Berry will have the chance to do just that. He's recently been promoted to director of IS at the School of Medicine at the University of California, San Francisco. His mission there: Replicate the UCLA client/server system.

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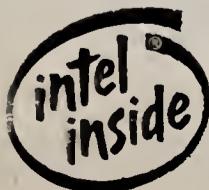
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Lawson Software's Accounting System nets high scores in features, updates

By Michael Sullivan-Trainor

As the Unix-based financial software market shifts into high gear to meet user downsizing needs, a small cadre of companies is staking initial leadership positions among large Fortune 500 installations. The Top 3 vendors and their products competing at this level, according to installation figures compiled by International Data Corp., are FourGen Software, Inc.'s FourGen, Oracle Corp.'s Oracle Financials and Lawson Software Corp.'s Accounting System.

Though it is the smallest of the three players on Unix platforms, Lawson achieved the highest overall satisfaction ratings from its users. This response included top scores in six areas of highest importance to all users surveyed.

However, each product had a distinct characteristic that users rated highly.

While Lawson shined in advanced features and updates, FourGen excelled in usability and reliability, and Oracle received top foreign site support and multicurrency ratings.

With the majority of Lawson users surveyed moving to a client/server setup with their financial applications, the product received its second highest rating for speed in converting all its modules to client/server. Other top categories for Lawson were numeric consolidation capabilities and timely updates for tax law changes. The company's lowest ratings were in cost and documentation and online help, the only categories in which users gave scores lower than 7.0.

FourGen users gave it high

marks for ease of use, customization, documentation and reliability; it scored an 8.0 in these areas. Low ratings were given for interfacing to other applications, service and cost.

Oracle gets bronze medal

Oracle users were most satisfied with the company's ability to provide reporting capabilities and numeric consolidation, in addition to multicurrency capabilities and local support for sites in foreign countries. Users were dissatisfied with cost and with the inability to provide inexpensive updates, giving that category a 3.6.

Overall, users were most satisfied with their software's ability to manage multiple accounts, implement tax law changes and provide local support in foreign countries. Cost and update expense were the least liked aspects of the products.

Buyers' Scorecard is a user survey of market-leading products conducted and tabulated by First Market Research Corp. in Austin, Texas. For a complete methodology, contact Michael Sullivan-Trainor at (800) 343-6474, ext. 229.

Standout scores		
Converting all modules to client/server		
IMPORTANCE: LOW	SCORE	
Lawson	8.5	The leading financial packages have different areas of major strength.
FourGen	7.0	
Oracle	6.0	
Ease of customization		
IMPORTANCE: HIGH	SCORE	Importance ratings are based on a 1-to-10 scale, where 10 is highest. Users were asked to rate the level of priority they place on the category when making a buying decision.
FourGen	8.0	
Lawson	7.5	
Oracle	5.6	
Multicurrency capabilities		
IMPORTANCE: LOW	SCORE	
Oracle	7.5	
Lawson	7.0	
FourGen	6.0	

Lawson's Accounting System

TOTAL SCORE 79



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST.

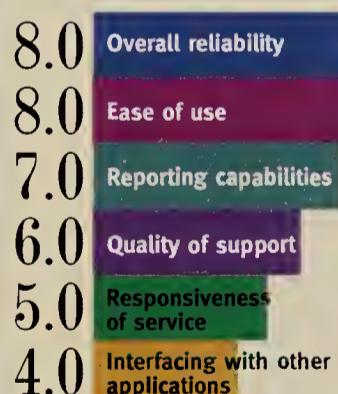
Would you buy the program again?



REASONS ARE BASED ON THE MOST FREQUENTLY STATED ANSWERS.

FourGen Software's FourGen

TOTAL SCORE 68



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST.

Would you buy the program again?



REASONS ARE BASED ON THE MOST FREQUENTLY STATED ANSWERS.

Oracle's Oracle Financials

TOTAL SCORE 63



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST.

Would you buy the program again?



REASONS ARE BASED ON THE MOST FREQUENTLY STATED ANSWERS.

Ratings in order of importance



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST.



PeopleSoft Financials: Good reporting, tough installation

Financials

Computerworld's Firing Line is an evaluation based on interviews with major users at corporate and educational installations. The product under evaluation is being used in live application environments.

Evaluators said PeopleSoft, Inc.'s Financials provides good financial functionality but added that its client/server technology was not easy to install, nor did the software provide desired security features.

Users of PeopleSoft Financials said they encountered more difficulties than expected while implementing the client/server-based accounting software. But they said those difficulties were due largely to their own inexperience. This issue led to low ratings for technical support because users required more assistance than expected. However, the users said PeopleSoft provided high-quality support overall.

Originally released last year, the PS/GL general ledger module of Financials is now supplemented by a full suite of other accounting modules. The modules run on DOS/Windows and a range of database servers.

The evaluators participating in this survey included business and systems analysts from a government agency, a securities firm, a university and a utility company. All participants had been using PeopleSoft Financials for at least six months.

The format for this evaluation was created with the assistance of Howard Rubin Associates.

Reliability

The evaluators said the product's reliability was average. They attributed most reliability problems to either their own inexperience with the product and with client/server technology or to unrelated problems with Windows or their networks.

Performance

All of the evaluators said performance was in line with their expectations. They noted that any performance trade-offs—particularly in comparison with their batch systems—were acceptable given the big gains in report and

account customization.

University: "It's not fast, but we knew that when we bought it. In the on-line portion, you trade instantaneous results for reduced errors downstream."

Installation

PeopleSoft played an integral role in installing Financials at all evaluators' sites.

They said the assistance provided by PeopleSoft included data migration from other databases or accounting packages; fine-tuning database servers to deliver optimal response; and training the technical staff in client/server issues and specific use of PeopleSoft tools.

Ease of use

Evaluators said Financials is no more difficult to use than expected. They said end users had little difficulty becoming acquainted with the Windows-based user interface and that most functions were readily utilized by financial and technical analysts.

University: "It's easier than we expected, but you have the

same analysis and design constraints that you have with Cobol."

Financial functions

The evaluators agreed that the business analysts in their organizations had driven the decision to use Financials after demonstrations and competitive analyses. They concurred that consolidation and allocation functions worked as expected.

Government: "Budgeting was originally our driving function, but nothing fit our needs. We developed our own [budgeting application] in Microsoft Excel and uploaded it to PeopleSoft using one of their tools."

Securities: "We liked the different tree structures and the roll-ups. The treasurer of the company went for a demo, and he wanted it immediately."

Data entry

Strong in reporting and standard accounting functions, Financials currently lags in batch data entry, the evaluators said. In particular, they said its method for performing field validation and checking sometimes hindered performance. However, the evaluators noted that they were aware of this trade-off prior to the purchase and did not consider it an overwhelming issue.

Government: "Validity and field checking will slow [the data-entry staff] a bit, but it's really not geared for high-level data entry. PeopleSoft is apparently delivering a batch entry module."

Securities: "If you use a lot of codes or multilevel edits, it will be slow."

Utility: "[PeopleSoft] is doing



work on the batch functions, but we're going to build our own front-end and batch editing."

Reporting capability

The evaluators gave their highest rating to the reporting functions included in Financials. Indeed, reporting played a critical role in their purchase decisions. Although the evaluators said report creation was still too difficult for casual users, they agreed that it was a faster and cheaper alternative to Cobol or a fourth-generation language reporting tool.

Utility: "The financial folks are the most impressed. What we have today is cumbersome. Information systems won't be in the business of writing reports any longer for the general ledger."

Security

Government: "Security is one of the weaker issues with PeopleSoft. They don't include too much of it."

Education: "It's more difficult to establish than we thought. We'd never seen a package that doesn't tie in with our security package, but this does not."

Written by Computerworld senior editor Garry Ray.

PeopleSoft responds

► **Security:** PeopleSoft has recently improved security through features introduced in Financials 2 and PeopleTools 3. We've extended our menu-level security and added our own new query and ad hoc reporting tool, which is included in our existing security system. PeopleSoft also intends to extend the security in our financial applications using the data-level security already available in

our human resources products.

► **Data entry:** In general, the world is moving away from the extensive need for high-volume data entry, but in some cases it is still required. We have applied new data-entry techniques to our high-volume data-entry requirements in our human resources product line, and we will be applying them to our financial products.



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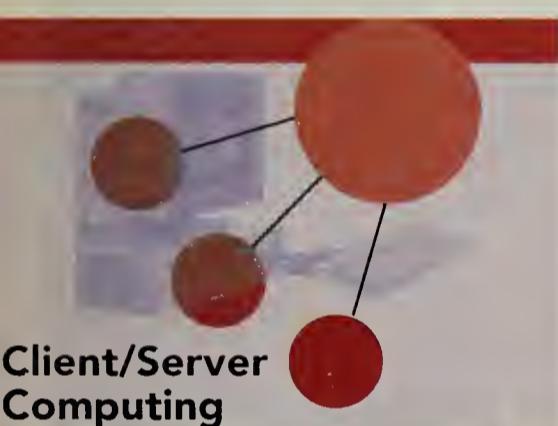
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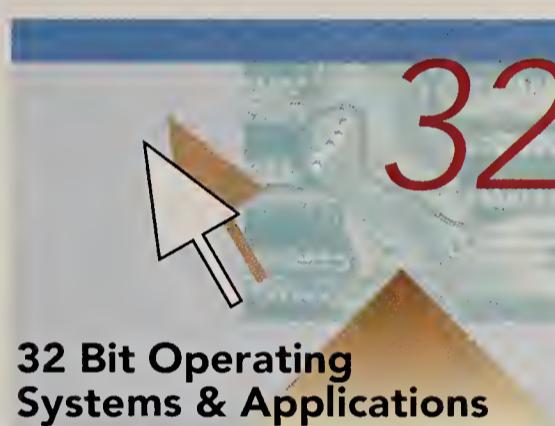
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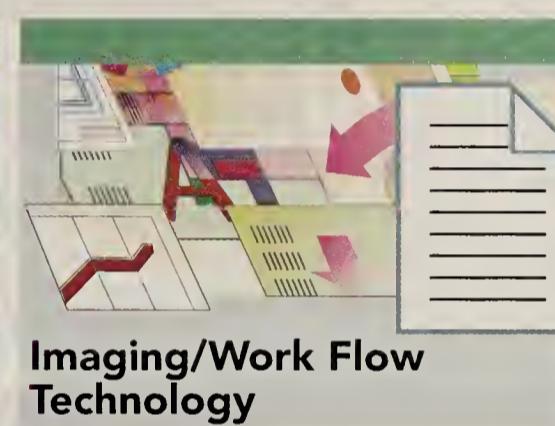
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OFFSHORE PROGRAMMERS:

REMEDY

AT ISSUE: Some people claim foreign programmers are stealing American jobs. Others

think they are a boon to the computer industry. Taking sides in this debate, a CEO at an offshore contract house and a U.S. contract consultant go head-to-head.

SOUND OFF!

BY STEVEN E. KRUSE

Foreign skills put U.S. workers to shame

I am a condemned man. I am condemned by others because I have not only hired foreign programmers but also started a company that acts as a conduit between Russian contract programmers and U.S. companies. According to some people, I may as well be taking food from the mouths of American children, what with the harm I am inflicting on their parents by taking away solid American programming jobs and shipping them overseas.

The thinking is purely nationalistic: If he's not a Yank, don't hire him. A recent *60 Minutes* episode, for instance, made it sound as if U.S. programmers were all standing in the unemployment line because the industry has put millions of non-Americans to work around the world in the past decade.

The point is that hiring foreign programmers not



► STEVEN KRUSE: Hiring foreign workers is good for U.S. and global economies

only helps the U.S. compete in the global market but also helps foreign economies, which promotes stability and growth worldwide. And I happen to think there's actually a shortage of good programming help here — a gap that talented foreign labor can fill. If U.S. companies had enough internal staffers to handle their needs, why would the industry spend about \$18.2 billion (or 4.4% of the average information systems budget) in 1992 on outside systems management contracts?

Capability, not nationality

At each of the software companies I managed during the past 13 years, I have hired several foreign programmers who immigrated to the U.S. I've hired French, Australian, British, Russian, Mexican, Cuban, Vietnamese and South African

citizens. My company paid them the going rates, whether they worked in a U.S. office or overseas.

Companies hire contractors based on capability, not nationality. When a firm such as The Santa Cruz Operation needs someone to handle Unix programming, it's only natural that English contractors end up high on the list. These people are highly skilled because Unix has a huge installed base throughout Europe.

Before founding Red Square Software in March 1993, I helped establish an offshore research and development center in Moscow for Pick Systems' sales and marketing operations in Eastern Europe in 1991. I found Russian engineers, scientists and technicians to be well-trained and innovative.

The average programmer there studies five or six programming languages

or RUIN?

BY LOUIS J. BUONINCONTRI

U.S. programmers can't fight low prices and rate fixing

I have weathered recessions, layoffs, diminishing information systems budgets and Section 1706 (tax reform that tightened rules on free-lance programmers) in my 20 years in the information technology industry. Just when I thought the worst was over, I find that I am competing

and operating systems before graduating from a technical institute. Because computer resources were very limited in the former Soviet Union, only the best have earned the right to enter the profession. They write exceptionally tight code and are very good at maximizing computer resources (disk and memory). It may sound corny, but I think we are obligated to put these people to work developing software for business rather than missile-guidance systems.

The industry is not taking advantage of low foreign wages or sacrificing American jobs; we're doing the world a favor by upping the standard of living in many countries. The more our neighbors make, the more they have to spend on U.S. goods and services, which creates more American jobs.

Russia, for example, is now buying nearly 2 million PCs per year, the majority of which are running U.S. software. Registered joint ventures between U.S. and Russian companies have risen from 131 operations in 1989 to nearly 2,500 this year. These sales contribute to high-growth American companies that create jobs both at home and abroad.

It's true that most organizations that use foreign programmers pay less for them. In Malaysia, for instance, a programmer receives \$1,000 a month on average. But that is *three times higher* than the average college graduate in that country receives. Our programmers in Moscow earn five times more than the average citizen.

The upshot? By paying what amounts to above-average wages, foreign engineers will be more likely choose to stay home than take jobs in the U.S.

However, using lower-priced labor works only if companies pass on the savings to customers in the form of lower software costs or, for

with cut-price foreign technicians from countries such as India, the Philippines, Hong Kong and the former Soviet Union.

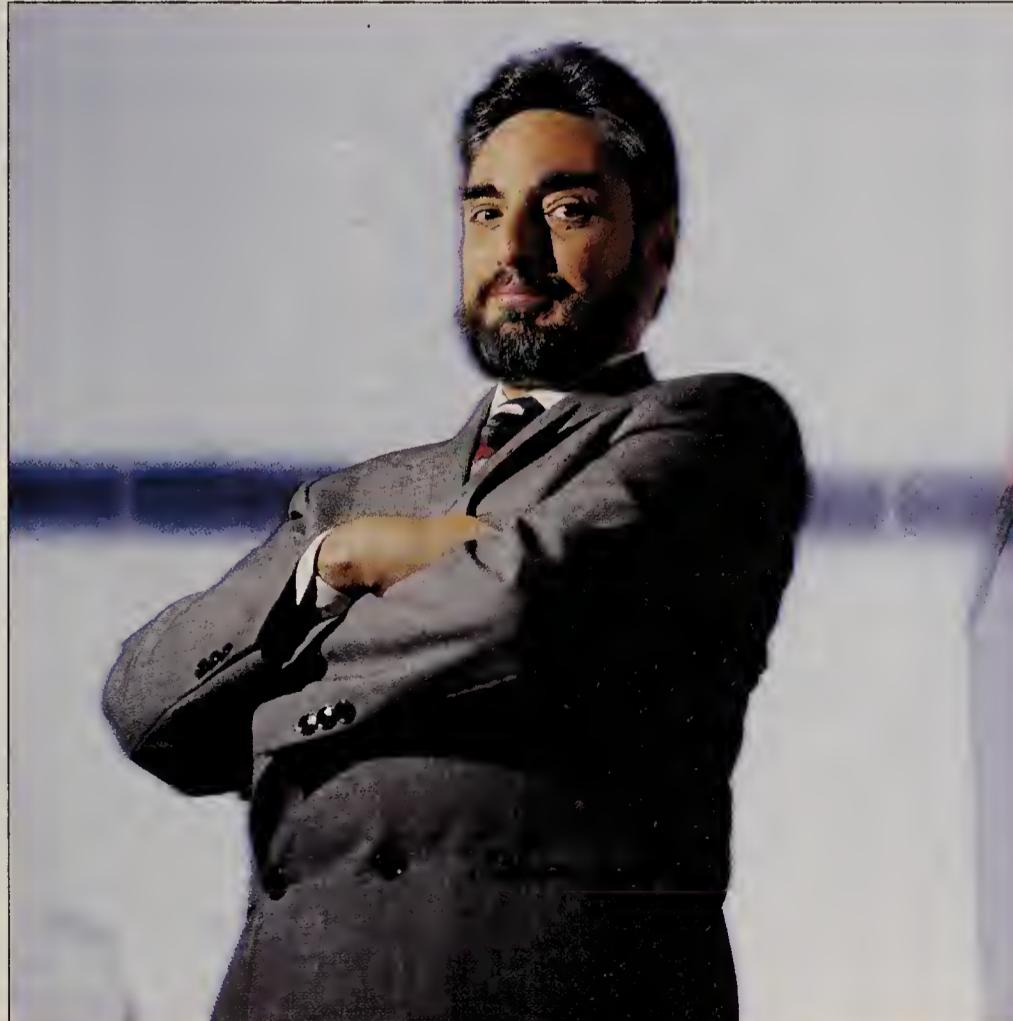
I do not want to sound like a complainer. I am a firm believer in the free enterprise system, which has enabled me to earn a living in the last 11 years as an independent contract consultant. But how can I and other American technicians compete with foreign consultants who get paid up to 70% less because the cost of living in their countries is so low?

More dangerous, however, is that this situation has led to more than competition — it has led to rate fixing. In some cases, companies have fixed the rates they will pay American contractors based on the unrealistic rates foreign-based contracting firms charge. One multinational telecommunications firm, for instance, used to pay \$400 to \$450 a day for a Cobol CICS programmer with four to five years' experience. Now, the company pays only about \$225 to \$280 a day for that same programmer.

I have on occasion been asked by Fortune 50 companies to reduce the rates of my contract services from the \$700 a day range (the going rate for someone with my background and years of experience) to about \$425. I was making that as a programmer many years ago!

Those are the situations I know about. Add to that the rumors about contract companies falsifying business visas and resumes just to make cheap labor available in the U.S. and you get a situation that stinks for U.S. programmers.

What really drives me mad is that these same countries that are stealing our jobs are receiving billions of our tax dollars in foreign aid each year. I remember a time not too long ago when consulting firms were afraid to own or rent foreign automobiles because it



SHONNA VALESKA

► LOUIS BUONINCONTRI: Foreigners steal jobs and still receive U.S. aid money

Foreign skills, page 124

Rate fixing, page 124

Rate fixing

CONTINUED FROM PAGE 123

might hurt their image. Boy, has that attitude changed. In New Jersey alone, for instance, there are at least 50 foreign contractors working in residence.

This situation did not happen overnight. Back in the early 1980s, Burroughs Corp. (now Unisys Corp.), which had

signed a sales agreement with Indian conglomerate TATA for hardware, ran into difficulty because of an Indian law prohibiting direct payment to American companies. The two firms agreed on a barter: TATA would provide Burroughs with Indian consultants as payment for the hardware.

This might seem like a pretty solid

business venture, but it ended up as a kind of indentured servant network. Often five or six TATA consultants were housed in two-bedroom apartments, getting paid \$14 an hour — about 40% below the prevailing rate at the time

— plus free room and board. That legacy continues to this day.

In the long run, companies will get

what they pay for. Many foreign coders are technically knowledgeable, but their communication skills leave much to be desired. I worked with some foreign programmers when I was a senior technical manager at a bank years ago, and I found the situation difficult. I know I'm a fast-talking New Yorker, but it's tough doing business when you have to write down all the instructions.

More important, perhaps, is that foreign coders do not have the business or subject expertise U.S. programmers have. How can foreign programmers question a specification without business expertise? How fully do they understand our business terms, payroll deductions, accounting techniques or business practices? They might be good coders, but they don't understand the business purpose of the programs they write.

One large U.S. insurance company found this out the hard way. It hired a group of foreign programmers to handle a CICS project because they were cheap. But about six months into the project, the firm fired the contractors because communication kept getting impaired.

The U.S. has lost the lead in manufacturing. Is the service sector to follow? One way the government has tried to increase the cost of foreign goods is through import taxes. Maybe it should place tariffs on foreign services performed for U.S. firms.

But imposing such tariffs might not do any good. Just as cheap labor keeps the cost of foreign manufactured goods down, so too will it keep the cost of overseas services down, taxes or no taxes.

I urge data processing professionals everywhere to write to lawmakers about foreign service providers. One thing seems certain: If foreign attorneys were taking U.S. lawyers' jobs, Washington would be on the situation in a flash.

Buonineontri is an independent contractor at GTND Software Systems and Accounting Services in Valley Cottage, N.Y., specializing in computer-aided software engineering, JAD and structured methodologies. He is currently on assignment for the city of New York's Financial Information Services Agency.

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internal IS, faster delivery of software. If that's not happening, then we should be attacking those companies' management—not their offshore programmers.

The problem with foreign programmers is not that they're cheaper than U.S. coders but that they may actually reveal weaknesses in our own work force. Foreigners have the talent, skills and work ethic that put many of their American counterparts to shame. U.S. programmers are afraid.

Kruse is chief executive officer of Red Square Software, a Newport Beach, Calif., contract services company with operations in the former Soviet Union. He is also chairman of the Software Council of Southern California.

Foreign skills

CONTINUED FROM PAGE 123

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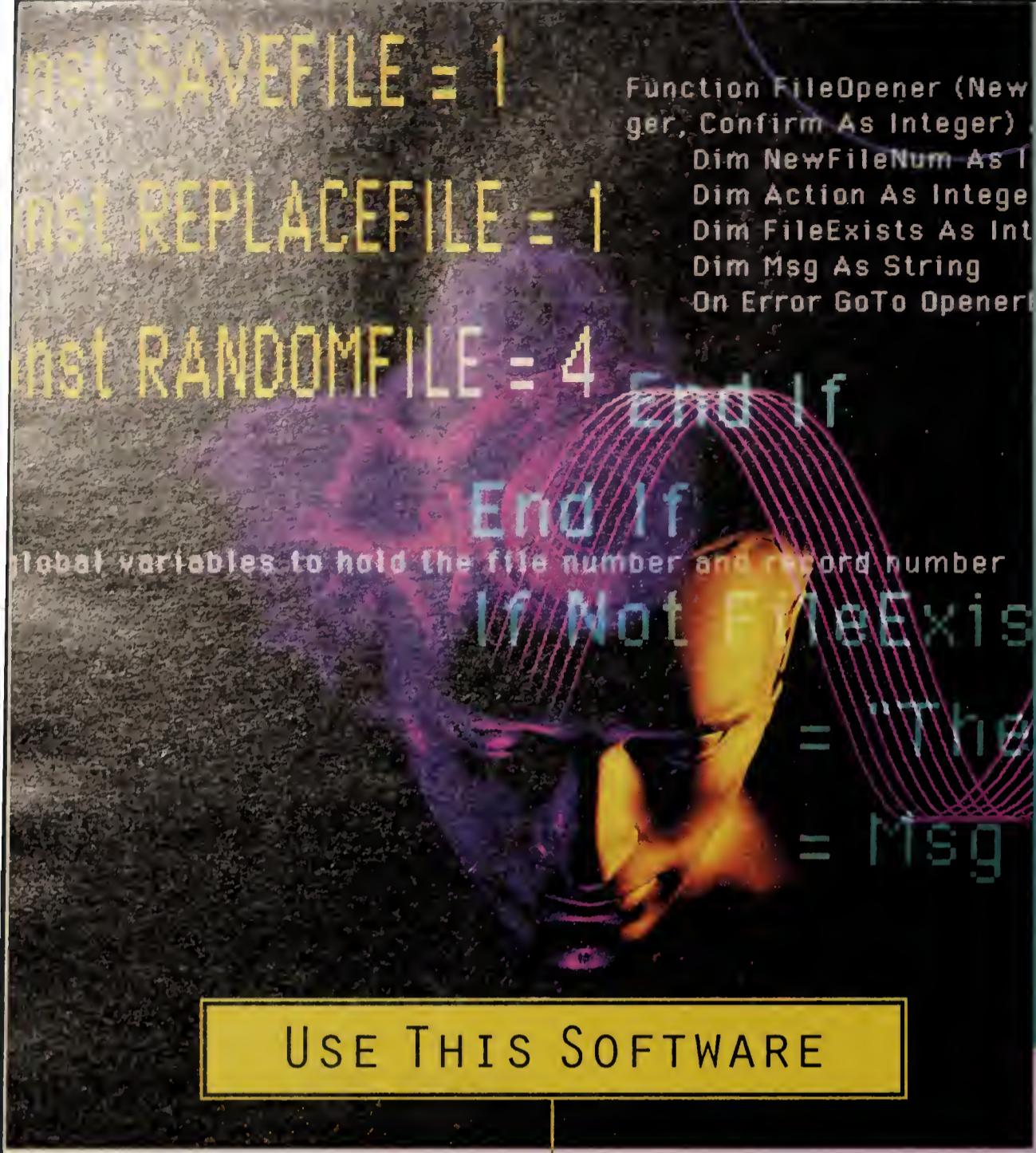
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Computer Careers

SQL: Keeping up with the evolving standard

By David Baum

UNIVERSAL DATABASE ACCESS has become a rallying point for vendors in the software industry, focused primarily around the evolving SQL standard.

And as SQL is increasingly implemented in client/server networks as a way of enabling PCs to access corporate databases, knowledge in this area has become essential for application programmers.

Unfortunately, says Jeff Balboni, chairman of the SQL Access Group, each database management system has a slightly different SQL interface. "There have been no restrictions regarding the addition of extensions to the SQL language by vendors," says Fred Zemke, a software architect at Sapiens International Corp. N.V. in Goleta, Calif.

However, this is changing with the rapid acceptance of SQL-92, the newest and most complete SQL specification to date and one that fills the "holes" that prompted so many vendor extensions. It is also good news for corporate programmers because it means fewer differences among relational database products and fewer language variations to master.

If you are just getting started with SQL, don't try to learn the language by reading the specifications documents provided

NEED to KNOW

by the standards bodies, advises Joan Sullivan, a computer scientist and project manager at the National Institute of Standards and Technology. "It's better to learn it by experimenting with one of the products that implements the standard," she says, "either through experimentation with the syntax itself or through a menu and forms approach."

The syntax is relatively straightforward. Anyone who is accustomed to formal programming languages and knows how to specify the difference between AND and OR can learn it very quickly.

Both Zemke and Sullivan say a good approach is to spend time with one of the forms-based database development tools that build SQL tables behind the scenes while developers paint screens and create fields through a visual interface. Afterward, you can look at the actual SQL tables and queries the system has constructed and gradually learn by comparing the functional screens with the underlying syntax.

Zemke cautions beginners to stick with one of the established, mainstream relational DBMS products from vendors such as Oracle Corp. or Sybase, Inc. In contrast, many of the PC-oriented databases offer only a small subset of SQL's complete capabilities.

To function in a scaled-down environ-

ment, PC database products generally impose limitations on processing-intensive operations such as GROUP BY and ORDER BY.

"To write any type of significant SQL program under DOS or Windows, you have to deal with all the compiler switches and linker switches, and deploying the application involves linking together many separate modules," says Ken Fleming, director of technology at Encompass in Cary, N.C. "The performance is poor since there is no paging and you need lots of memory."

For this reason it is much easier when starting out with SQL to work on a more powerful platform, such as Digital Equipment Corp.'s VAX, IBM's RS/6000 or a similar-level environment. "You can just write flat SQL code and let the operating system manage the memory," Fleming explains.

Looking ahead

A widespread adoption of SQL-92 will iron out many differences in vendor implementations of the language, but it's going to take time, and most vendors acknowledge that variations will still exist. This will force programmers to continue learning new tricks as they move from one DBMS to another.

Meanwhile, standards groups have turned to the next specification, SQL-93, which will attempt to standardize access to abstract data types while incorporating some of the object-oriented concepts with which the relational model doesn't deal.

Baum is a free-lance writer in Santa Barbara, Calif., specializing in emerging technologies.

the SQL specification

The main additions to the SQL language are the following:

SQL86 was a quick standardization of IBM's Structured Query Language.

SQL89 added several important integrity features, including referential integrity, default column values and table check constraints.

SQL92 corrected a few errors in the SQL-89 specification and added many new functions. There are three levels to SQL-92: entry, intermediate and full.

- The entry-level SQL-92 specification includes standardized SQLstate error return codes, date and time data types and variable-length character strings.
- The intermediate SQL-92 specification includes domains, CASE expression and schema manipulation statements.
- The full SQL-92 specification includes the following: new bit string data types, session management and referential updates.

The future

SQL93 specification will one day add user-defined abstract data types that can carry object identifiers; flow of control statements so users can define and call external SQL procedures; and generation types such as lists and sets and arrays.

* not a complete listing of the evolving functionality

Source: Leonard Gallagher, chairman of the International SQL Development Group, Gaithersburg, Md.

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ADDITIONAL QUALIFICATIONS FOR BOTH POSITIONS:

- Technical familiarity with IBM 30xx systems running under MVS or DEC VAX systems running under VMS, PC LANS, OS/2, DOS, and Microsoft Windows
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RANDOM NOTES

On information systems management . . .

"

Too often, first-time managers think their responsibility is to control a project rather than coach, enable and liberate their staffs. There's a shortage of good role models for [new managers] to emulate.

Most mid- and senior-level managers were originally promoted based on their technical expertise and never received the training or developed the skills necessary to manage people. "

— Richard DeFiore, president, Interpersonal Technology Group, an IS management training and consulting firm based in Rockville Center, N.Y.

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"All those Cobol programmers won't have careers in the future unless they get themselves retooled. The organization of the future won't have the money to retrain them."

— Robert A. Zawacki,
professor of management and
international business,
University of Colorado at
Colorado Springs

B U S T

You say tomatoye, I say tomahto

IS managers and their bosses at 62 New York- and Chicago-based companies have different priorities when it comes to rating the top IS issues facing their organizations in the next year

The following issues are ranked according to overall importance.

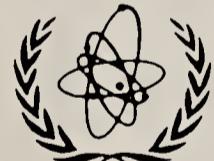
CIOs	Senior IS
2	1
4	2
5	3
8	4
1	5
7	6
10	7
13	8
9	9
12	10
11	11
6	12
3	13
15	14
14	15

Source: Omicron, an IS consortia in Mountain Lakes, N.J. Compiled by Leslie Goff, a free-lance writer in New York.

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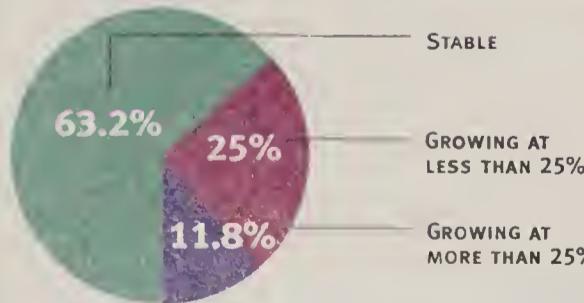
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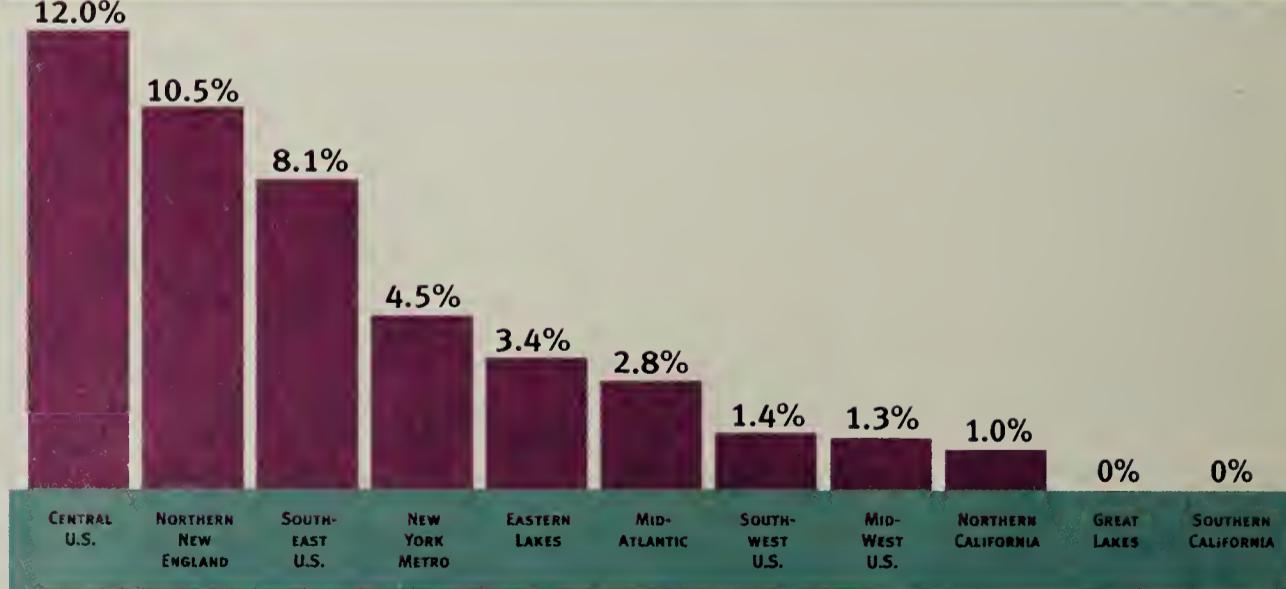
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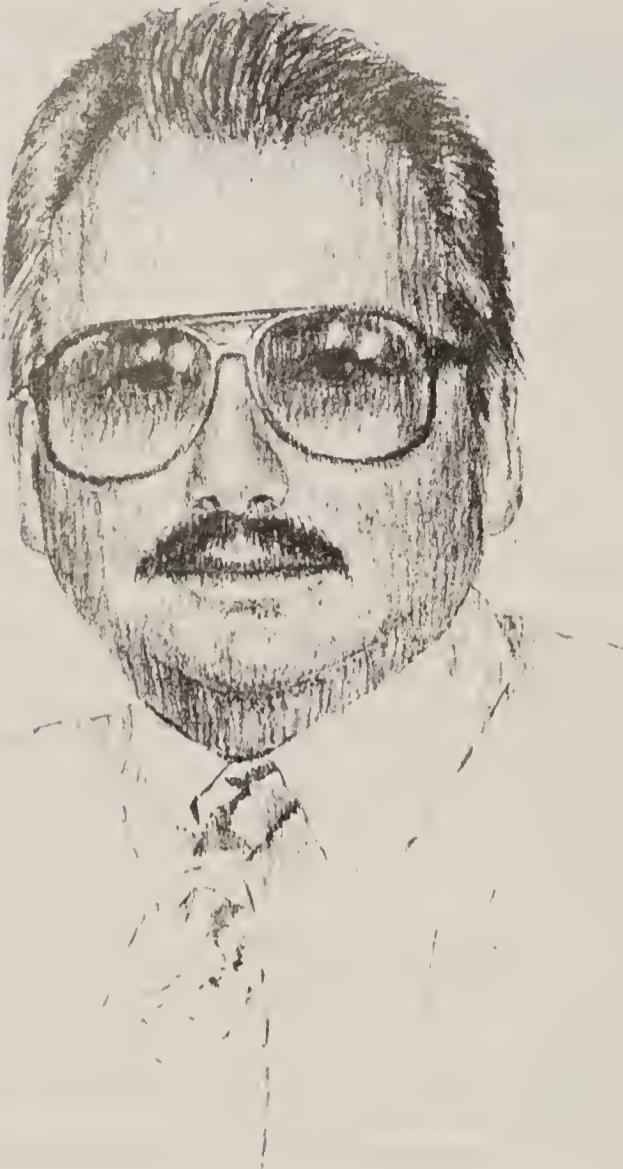
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Project Management Software Putting it through the p-a-c-e-s



By Julie Hart

With Windows on the scene, project management software is more accessible and affordable than ever before. The problem is that selecting the right package is a hefty responsibility.

Project management consultants recommend the following guidelines for testing Windows-based and most DOS-based project management applications.

The best test data is an existing project, but if you don't have one, develop a model of at least 10 tasks for testing. Using this model, calculate schedule and other results by hand to compare with your candidate project management applications.

Task Scheduling

It's important to determine how the packages handle constraints and "float," a capability that shows if a project is running over schedule.

Designate a finish constraint on one of the middle tasks in your 10-task project. For instance, task five — putting the roof on a new house — must be completed by Dec. 1. Based on this constraint, let the package determine the schedule. Also, perform the test in reverse by putting a start constraint on the same task. Compare both tests to your hand-calculated schedule to identify potential problem areas.

Some packages will schedule the roof for completion by Dec. 1 as constrained,

but preceding tasks such as framing the house might not be scheduled until after the roof is completed, says Harvey Levine, principal at The Project Knowledge Group, a consulting firm in Saratoga Springs, N.Y.

Using the same model, you can also verify that the packages properly support forward- and backward-path calculations, which determine both the earliest and the latest possible start and finish dates of each task.

To test this, make the duration of your 10-task project longer than your finish date. After the package calculates a schedule, check the float, which indicates time required or time to spare, to see if it matches your hand calculation.

Resource Leveling

This is where the package schedules your resources (people) in the optimal way. In this area, results can vary greatly among products. "Some packages level so that the results are 30% to 50% longer than the project actually requires," says Daniel Yahdav, principal of Soft Decision, a consulting firm in San Rafael, Calif.

In fact, the same project loaded on a dozen applications may kick out a dozen different answers. "There may be nothing wrong with this, but you need to know which package best fits the way your organization works," says Gopal Kapur, president of the Center for Project Management, a consulting firm in San Ramon, Calif.

To test this theory, add several re-

sources to your 10-task model and determine by hand an optimum schedule. Then ask the packages to perform leveling, spread resources out over the time given and compare the results.

Calculation Speed

Yahdav recommends at least 10 tasks be used to test application speed. To complete this test, perform identical operations, such as resource leveling, and compare the results. You may find a difference of seconds, minutes or hours.

"But there's a trade-off between speed and quality," Kapur says. If the package that requires more time distributes your resources better, weigh what's most important to your organization. Analyze speed results in light of what they really mean to your overall project.

Cost Management

Depending on your organization's needs, there are several areas of concern regarding cost management. For instance, you may need to specify resources at different pay rates, but some packages bill only at a single rate.

Another potential trouble spot is cost

distribution. To determine how each package handles this, enter 10 cost items into your model, such as travel, telephone and hardware, then view the package's estimate. The ideal format for estimate distribution, Kapur says, is by task; however, you'll discover that some packages handle distribution only by deliverable or phase.

"A package might give you overall hardware costs but not hardware costs for prototyping," Kapur says.

System Robustness

A good way to test robustness is to key in junk data and see how the application reacts. For instance, instead of typing 12 in the duration field, key in "1a." Or instead of a "y" or "n," try to key in a "z" when the system asks for a yes or no response.

"If most of the junk is taken in, you'll have a lot of problems later on," Kapur says. "A good package won't let you enter wrong information into every field."

Reporting

Make a list of what you want reports to look like and at what degree of detail for four employee levels: team, project manager, manager and executive. Then go into each application, select report features and review the results.

"Too many reports have everything on them, which makes them less useful," Kapur says. For instance, an executive wants to ensure that milestones are being met on budget; he doesn't need to know how many hours Bob and Jane are scheduled to work next week.

Network Access

To test the networking capabilities of candidate project management applications, Kapur recommends that you load 10 LAN nodes for each package you're considering.

"Unless you take the time to run the network version for a couple of weeks and perform backups, you won't really know much about its reliability," he says.

Hart is a free-lance writer in San Jose, Calif.

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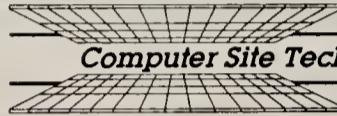
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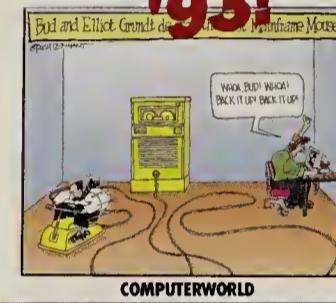
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 Hitachi America Ltd. 61
 Hudson Institute, Inc. 129
 Hughes Aircraft Co. 1
 Hummingbird Communications Ltd. 42
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 Microsoft Corp. 1,4,6,8,14,16,28,38,37,46,51,52,65,87,107,146
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 Novell, Inc. 1,6,8,14,16,15,46,61,65,101,107,146

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 PacTel Cellular 71
 Paws, Inc. 20
 PeopleSoft, Inc. 28,78,107,146
 PepsiCo, Inc. 101
 Platinum Software Corp. 107
 Poc-It Management Services, Inc. 46
 Powersoft Corp. 4,28,87,107,114
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 Promis Systems Corp. 53
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 Reach Software Corp. 28
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 ShowTime Network, Inc. 1
 Siemens Energy and Automation 87
 Sikorsky Aircraft Co. 28
 Sky Chefs, Inc. 51
 Soft Decision 137
 Software 2000, Inc. 85
 Software AG of North America, Inc. 1
 Solomon Software 46
 Spectrum Information Technologies 71
 Stac Electronics, Inc. 37,101
 Sterling Software, Inc. 85
 Storage Technology Corp. 4
 Summit Strategies, Inc. 28
 Sun Microsystems, Inc. 1,10,24,51,80
 SunSoft, Inc. 6
 Sybase, Inc. 24,28,51,85,107,114,128
 Symantec Corp. 38
 Synon, Inc. 80
 SynOptics Communications, Inc. 51,65

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 Virtual Technologies, Inc. 88
 VMI Learning Systems 42

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 Walker Interactive Systems, Inc. 107
 Wang Laboratories, Inc. 80
 Warren Petroleum 78
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 Wisconsin Power and Light 92

X

Witco Corp. 101
 Wolfram Research, Inc. 38
 WordPerfect Corp. 16
 WorkGroup Technologies, Inc. 1,16,51

Friday Stock Ticker

Gainers

Losers

Percent

RATINGS INC.	42.1	ROSS SYSTEMS	-29.6
GROUP 1 SOFTWARE	28.1	KENDALL SQUARE RESEARCH	-21.7
MICROPOLIS CORP.	21.6	CAMBEX CORP.	-17.0
SYRUCT. DYNAMICS RESEARCH	21.1	BMC SOFTWARE INC.	-16.7
MAXTOR CORP.	20.5	STATE OF THE ART	-16.7
QMS INC.	16.7	TANDEM COMPUTERS INC.	-15.2
SEI CORP.(H)	14.6	SOFTWARE PUBLISHING CORP.	-14.0
BOLT, BERANEK & NLWMAN	14.0	PLATINUM SOFTWARE	-13.0

Dollar

XEROX CORP.	5.38	8MC SOFTWARE INC.	-9.50
PROGRESS SOFTWARE CORP.	4.25	DSC COMMUNICATIONS	-4.75
ZILOG INC.	3.75	KENDALL SQUARE RESEARCH	-4.50
STRATUS COMPUTER INC.	3.50	AUTODESK INC.	-4.00
MOTOROLA INC.	3.25	ROSS SYSTEMS	-3.63
ATMEL CORP.	3.25	PLATINUM SOFTWARE	-3.50
SOUTHWESTERN BELL CORP.	3.00	MATSUSHITA ELECTRONICS	-3.00
SEI CORP.(H)	3.00	ORACLE CORP.(H)	-2.88

BMC SOFTWARE, INC. FELL IN SPITE OF A QUARTERLY REPORT THAT SHOWED GROWTH IN REVENUE AND PROFITS; ANALYSTS WERE CONCERNED ABOUT THE COMPANY'S SALES ABROAD. ROSS SYSTEMS' EARNINGS ALSO DISAPPOINTED WALL STREET.

Industry Almanac

Rough sledding for drive makers

PC disk drive manufacturers have had more tough quarters lately than the New England Patriots.

Conner Peripherals, Inc. (CNR) took a big restructuring charge in the September quarter; adding in an operating loss, the company's net loss for the quarter was close to \$400 million. John Dean, an analyst at Salomon Brothers, Inc., noted in a report that the write-off is a constructive step for Conner, which has appealing products in the pipeline but must pare its costs to return to profitability.

Quantum Corp. (QNTM), Applied Magnetics Corp. (AMC) and Maxtor Corp. (MXTR) also lost money last quarter. Maxtor recently propped itself up with a \$150 million cash infusion from an outside investor, as the company's long-term prospects were looking shaky.

Seagate Technology, Inc. (SGAT) provided a little relief by posting a profitable quarter. Seagate appears to be the best-positioned company in the sector because of a broad product line and low-cost manufacturing capability, according to Dean.

Seagate's stock set a 52-week high last week. Most of the other drive makers were trading near their 52-week lows.

Dean noted that the summer quarter is traditionally difficult for this sector. With demand for PC systems expected to remain high for both this year and next, the drive manufacturers should have a chance to turn their fortunes around.

—Derek Slater



EXCH	52-WEEK RANGE	Oct. 29 Wk Net 3 PM Change	Wk Pct Change	EXCH	52-WEEK RANGE	Oct. 29 Wk Net 3 PM Change	Wk Pct Change
Communications and Network Services							
OTC	40.00 19.38	3 COM CORP.	30.38 1.75 6.1	OTC	13.63 4.88	INTERLEAF INC.	5.50 -0.25 -4.3
NYS	91.13 63.38	AMERICAN INFO TECHS CORP.	84.63 1.13 1.3	OTC	15.50 4.75	INTERSOLV INC.	7.75 -0.75 -8.8
NYS	65.00 42.38	AT&T	57.63 -0.50 -0.9	OTC	54.75 15.50	KNOWLEDGEWARE INC.	16.00 -0.50 -3.0
OTC	4.44 0.75	ARTEL COMMUNICATION CORP.	3.13 0.00 0.0	OTC	50.75 18.75	LEGENT CORP.	24.25 0.13 0.5
OTC	24.50 12.50	BANYAN SYSTEMS INC.	19.75 0.75 3.9	OTC	23.00 4.25	LOTUS DEVELOPMENT	48.38 2.50 5.4
NYS	69.13 44.50	BELL ATLANTIC CORP.	63.75 0.88 1.4	OTC	21.25 4.50	MATHSOFT	5.38 0.13 2.4
NYS	63.38 46.75	BELLSOUTH CORP.	62.63 0.38 0.6	OTC	11.63 2.50	MCAFEE ASSOCIATES	5.75 0.00 0.0
NYS	14.75 3.88	BOLT, BERANEK & NEWMAN	13.25 1.63 14.0	OTC	12.88 6.50	MEGA SOFTWARE	6.50 0.00 0.0
OTC	18.50 9.50	BROOKTROUT TECHNOLOGY	10.25 -0.50 -4.7	OTC	46.00 19.75	MENTOR GRAPHICS (H)	12.00 -0.38 -3.0
NYS	119.00 66.75	CABLETRON SYSTEMS	92.75 -0.50 -0.5	OTC	13.25 4.38	MICRO FOCUS	22.63 -1.38 -5.7
OTC	36.50 8.75	CENTIGRAM COMMUNICATIONS	32.25 -0.25 -7.9	OTC	98.00 70.38	MICROGRAFX INC.	8.56 0.94 12.3
OTC	55.50 22.25	CHIPCOM CORP.	47.00 -0.25 -5.5	OTC	64.63 18.88	MICROSOFT CORP.	80.00 0.25 0.3
OTC	59.25 30.00	CISCO SYSTEMS INC.	51.00 2.25 4.6	OTC	40.50 22.50	ORACLE CORP. (H)	58.63 -2.88 -4.7
OTC	17.75 8.00	COMPRESION LABS INC.	17.38 1.50 9.4	OTC	44.75 22.50	PARAMETRIC TECHNOLOGY	40.00 -1.88 -4.5
OTC	36.00 20.75	CROSSCOMM	31.75 2.50 8.5	OTC	40.00 22.00	PEOPLESOFT	38.25 2.25 6.3
OTC	4.63 1.88	DATA SWITCH CORP.	2.38 -0.13 -5.0	OTC	39.75 13.50	PHOENIX TECHNOLOGIES	4.00 -0.13 -3.0
NYS	19.88 12.38	DIGITAL COMM. ASSOC.	18.63 0.00 0.0	OTC	25.00 7.25	PLATINUM SOFTWARE	23.50 -3.50 -13.0
OTC	12.75 3.63	DIGITAL SYSTEMS INT'L INC. (L)	3.94 0.06 1.6	OTC	61.50 32.25	PLATINUM TECHNOLOGY	8.63 0.88 11.3
OTC	73.13 16.63	DSC COMMUNICATIONS	65.63 -4.75 -6.7	OTC	6.75 1.94	PROGRESS SOFTWARE CORP.	55.25 4.25 8.3
OTC	9.50 4.75	FIBRONIX INT'L INC.	5.13 -0.38 -6.8	OTC	32.00 16.00	QUARTERDECK OFFICE SYS.	2.31 0.06 2.8
OTC	24.00 8.75	FILENET CORP.	18.50 1.00 5.7	OTC	11.38 4.25	RASTEROPS	8.00 0.50 6.7
OTC	4.38 1.50	GANDALF TECHNOLOGIES INC.	3.00 -0.13 -4.0	OTC	15.25 4.63	ROSS SYSTEMS	8.63 -3.63 -29.6
OTC	2.06 0.69	GATEWAY COMMUNICATIONS	0.88 0.06 7.6	OTC	28.75 15.25	SIPIENS INT'L CORP. N.V.	26.88 -0.25 -0.9
NYS	15.75 3.88	GENERAL DATACOM INDNS.	11.00 0.75 7.3	OTC	14.50 5.50	SOFTWARE PUBLISHING CORP.	6.13 -1.00 -14.0
ASE	3.75 2.00	GO VIDEO	2.44 -0.25 -9.3	OTC	17.25 3.88	SOFTWARE TOOLWORKS INC. (H)	15.50 -0.38 -2.4
NYS	39.88 32.88	GTE CORP.	39.38 1.13 2.9	OTC	2.75 0.75	SPINNAKER SOFTWARE	1.88 0.13 7.1
NYS	94.75 64.75	ITT CORP.	92.50 -0.25 -0.3	OTC	13.75 5.75	STATE OF THE ART	8.13 -1.63 -16.7
OTC	29.88 16.81	MCI COMMUNICATIONS CORP.	28.50 0.00 0.0	NYS	32.13 17.63	STERLING SOFTWARE INC. (H)	32.00 1.38 4.5
OTC	6.50 1.50	MICROCOM INC.	3.13 0.38 13.6	OTC	21.63 9.63	STRUCT. DYNAMICS RESEARCH	16.50 2.88 21.1
OTC	24.25 3.50	NETRIX CORP.	4.88 -0.13 -2.5	OTC	77.50 38.25	SYBASE INC.	71.25 2.50 3.6
OTC	19.00 6.50	NETWORK COMPUTING DEVICES	8.25 0.75 10.0	OTC	20.50 9.25	SYMANTEC CORP.	20.00 1.63 8.8
NYS	11.63 5.38	NETWORK EQUIPMENT TECH.	9.63 0.63 6.9	OTC	25.50 10.00	SYSTEM SOFTWARE ASSOC.	14.75 1.75 13.5
OTC	20.13 8.00	NETWORK GENERAL	14.63 -0.25 -1.7	OTC	6.50 2.75	TRINICZ CORP.	5.63 -0.38 -6.3
OTC	15.75 6.88	NETWORK SYSTEMS CORP.	8.88 0.38 4.4	OTC	26.50 13.50	VIEWLOGIC SYSTEMS	23.75 0.63 2.7
OTC	73.88 11.50	NEWBRIDGE NETWORKS CORP.	60.88 0.50 0.8	OTC	23.50 5.50	WALKER INTERACTIVE SYSTEMS	8.75 0.25 2.9
NYS	46.00 21.38	NORTHERN TELECOM LTD.	28.50 1.50 5.6	OTC	3.19 0.84	WORDSTAR	1.25 -0.03 -2.4
OTC	35.25 17.00	NOVELL INC.	22.00 0.38 1.7				
NYS	48.88 39.50	NYNEX CORP.	42.13 -1.63 -3.7				
OTC	30.00 18.75	OCTEL COMMUNICATIONS CORP.	24.50 -0.50 -2.0				
OTC	6.13 3.75	PENRIL DATA COMM NETWORKS	5.75 0.25 4.5				
OTC	30.50 14.50	PICTURETEL CORP.	19.00 1.50 8.6				
OTC	11.50 3.63	PROTEON INC.	5.00 -0.38 -7.0				
NYS	38.88 17.75	SCIENTIFIC ATLANTA INC.	35.25 -0.25 -6.0				
NYS	47.00 31.75	SMITHSONIAN BELL CORP.	44.25 3.00 7.3				
OTC	40.25 24.38	SPRINT CORP.	36.00 -0.25 -0.7				
OTC	27.00 12.50	STANDARD MICROSYSTEMS CORP.	21.50 0.25 1.2				
OTC	19.25 10.00	STRATACOM INC.	16.00 0.00 0.0				
OTC	42.75 19.59	SYNOPTICS COMMUNICATIONS	27.75 1.13 4.2				
OTC	9.88 2.88	TELEBIT CORP. (H)					

Computer Industry

Smaller deals paying off for EDS

By Mark Halper

For the fourth consecutive quarter, Electronic Data Systems Corp. has reported sluggish revenue growth, a trend that some analysts last week attributed to a hiatus in the market for huge outsourcing deals, but EDS explained otherwise.

Revenue for the third quarter that ended Sept. 30 barely budged, moving from \$2.06 billion in the same period a year ago to \$2.08 billion. Layoffs and other cost-cutting maneuvers, however, did enable EDS to score a 14.5% profit increase to \$191.6 million.

The Plano, Texas, outsourcing giant said it expects to return to double-digit growth next quarter. In a conference call with financial analysts, EDS painted a bright long-term outlook, noting it is a finalist for a giant outsourcing deal with Lufthansa German Airlines. The deal could be worth as much as \$2 billion to \$3 billion, said Merrill Lynch & Co. analyst Stephen McClellan.

EDS also cited an additional estimated \$11 billion in business prospects. It is a finalist for potential multibillion-dollar

deals at British Aerospace and Inland Revenue Service in the UK. Both British Aerospace and Inland are expected to make a final outsourcing decision by year's end. EDS is also one of four bidders at Xerox Corp., although a Xerox decision on whether it will even outsource could take six months to a year, McClellan noted.

EDS attributed the present stagnation to several factors: a 7% decline in income from business with its parent company, General Motors Corp. (GM), unfavorable foreign currency exchange rates, a high number of contracts winding down and a reclassification of a Korean joint venture that effectively eliminated revenue from EDS books.

Fewer megadeals

Analysts said that while EDS has racked up a string of small and midsize contracts, in the last year it has won fewer of the \$100 million-and-over megadeals than it has in the past.

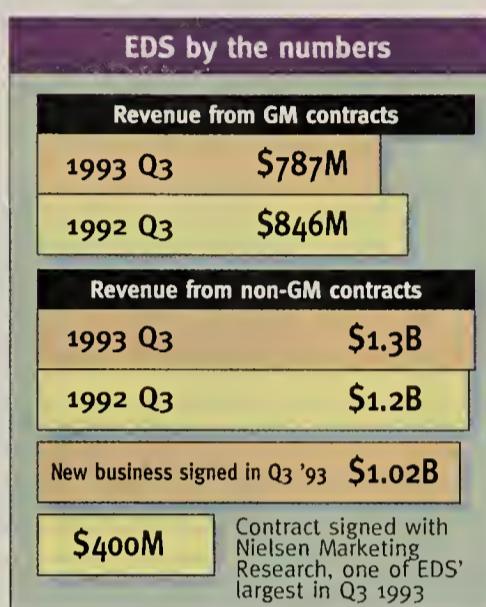
Alex. Brown & Sons analyst Cato Carpenter said one reason for the slowdown is that EDS is less able these days to "buy" outsourcing deals by purchasing computer assets from customers in ex-

change for longer term processing commitments.

While EDS' cash holdings are up from \$587.9 million a year ago to \$687.1 mil-

lion, Carpenter suggested that loss-troubled parent GM is "sucking up all the cash [EDS] generates."

He further pointed out that customers in general are not as cash-strapped as they were in the recent past because



many corporations have stanching losses through their own regroupings. "The whole momentum of megaoutsourcing is currently on hold," Carpenter said.

EDS said it is racking up enough small to midsize deals to compensate, pointing to bookings of \$4.3 billion in new business this year to date. A spokesman said EDS is on a pace equal to its record booking of \$5.7 billion in new business in 1991.

"There were quite a few in the \$10 million to \$100 million range that don't generate a lot of publicity, but we're very interested in those," the spokesman said.

The company said its non-GM business grew by 7% in the third quarter, from \$1.20 billion to \$1.28 billion. The share of business represented by GM projects, once close to 80%, continued to decline to 38%.

The EDS spokesman said unfavorable currency rates connected to the strong dollar caused a \$70 million hit on revenue. At the same time, EDS continues to feel the impact of having completed long-term projects at the end of 1992 that had been generating \$129 million in annual revenue. Normally, project completions represent the termination of about \$50 million in revenue, the spokesman said.

Select calendar third-quarter financials

COMPANY	REVENUE 6/93 - 9/93	% CHANGE FROM 1992	NET INCOME 6/93 - 9/93	% CHANGE FROM 1992
The Acer Group	\$461.5M	42%	\$6.26M	NM*
Aldus Corp.	\$62.2M	37%	\$4.3M	310%
AST Research, Inc.	\$514.4M	80%	\$8.2M	8%
Auspex Systems, Inc.	\$20M	30%	\$2.4M	37%
Banyan Systems, Inc.	\$32.4M	14.5%	\$3.5M	88%
Computer Sciences Corp.	\$622.3M	1%	\$18.3M	7%
Control Data Systems, Inc.	\$97.1M	(15%)	\$982M	376%
Convex Computer Corp.	\$43M	(25%)	\$6.3M	707%
Cray Research, Inc.	\$201M	(8.3%)	\$15.5M	134%
Data General Corp.	\$278.4M	(3.4%)	(\$37.2M)	NM*
Easel Corp.	\$6.4M	(20%)	\$1.4M	(51%)
Electronic Data Systems Corp.	\$208B	NM*	\$192M	15%
IBM	\$14.7B	.3%	(\$48M)	NM*
Informix Corp.	\$90M	31%	\$14.5M	20%
Micrografx, Inc.	\$15.9M	17%	\$608M	568%
Proteon, Inc.	\$28.4M	(8.3%)	(\$1.8M)	(6.2%)
Pyramid Technology Corp.	\$60.5M	19%	\$3.4M	NM*
Ross Systems, Inc.	\$19M	15%	(\$1.2M)	NM*
Stac Electronics, Inc.	\$7.8M	25%	(\$42M)	NM*
Stratus Computer, Inc.	\$127M	2%	\$14.4M	23%
Symantec Corp.	\$58M	19%	\$2.4M	NM*
Tandem Computers, Inc.	\$553M	4%	\$3.2M	88%
Wall Data, Inc.	\$17.3M	122%	\$3.2M	325%

*Not meaningful

The third quarter saw once-captains of the industry continue the struggle to restructure their ranks and right their listing financials while also setting out into uncharted waters. Navigating through client/server straits has proved tricky for many, particularly for those also buffeted by unfavorable currency translation, slow European sales and weakening demand for proprietary systems.

IBM, Data General Corp. (DG), Computer Sciences Corp., Control Data Systems Corp., Stratus Computer, Inc. and Tandem Computers, Inc. all posted less than impressive, albeit mostly expected, earnings for the third quarter. In many cases, the revenue needle stuck or barely budged on a year-to-year quarterly basis.

Although its revenue was flat on a year-to-year quarterly basis, IBM managed to keep its losses for the third quarter to \$48 million, a vast improvement over its \$2.8 billion loss in the third quarter of 1992.

Revenue was down slightly at Control Data from the same period a year ago, but it did see a small profit. Unappreciated, President Jim Ousley said continuing "economic and marketing challenges in Europe" will impact results in the fourth quarter and into 1994.

With a barely perceptible change in revenue between fiscal 1992 and 1993, Tandem reported a \$517.7 million loss for the year, \$451 million of which was a restructuring charge. The fourth quarter of 1993 was profitable — barely — which Tandem President James Treybig attributed in part to significant cuts in costs, personnel and salaries.

DG may have bailed more woes than its compatriots as it announced plans to lay off "several hundred" of its 6,550 employees in the face of its seventh annual loss in the last eight years. Its \$37.2 million fourth-quarter loss already includes a \$25 million charge to cover the cost of the work-force reduction and unspecified other restructuring actions.

Also suffering losses for the quarter were Convex Computer Corp. and Easel Corp. Easel is late with a product that unites its client/server tools with those of acquired subsidiary Enfin Software Corp.

HONORING the BEST



One hundred and forty-eight well-dressed IS executives, corporate sponsors and guests were honored for their achievements at the sixth annual *Computerworld Premier 100 Awards* banquet last Monday in the Pegasus Suite high atop the 64th floor of New York's 30 Rockefeller Center.

Scott Cooper, senior vice president of technical services at Home Shopping Network, Inc., won the Sun "IS Visionary of the Year" award for overseeing the development of an innovative Pay-Per-View/Video-On-Demand system that will allow households to access movies via an 800 telephone line.

Pictured below, *Premier 100* dinner attendees listen as Harvard Business School Professor Richard Tedlow describes the mistakes that even good companies make if they misread the market

The dinner, which honors the 100 companies and their IS organizations deemed the most effective in using technology, featured an awards presentation to each of the first-place finishers in 10 industry groups. The top finishers were: The Boeing Co., Dibrell Brothers, Inc., Banc One Corp., Rubbermaid, Inc., Air Products and Chemicals, Inc., Alexander and Baldwin, US West, Cummins Engine Co., Abbott Laboratories and Winn-Dixie Stores, Inc.



Elaine DeLappe, director of human resources, represented The Boeing Co., which finished first in Aerospace



Robert Barrett, president and COO at Banc One Services Corp., accepted the award for Financial Services



Ray Hoving, director of the MIS Process Systems Group at Air Products and Chemicals, Inc., topped the Petroleum and Chemicals category

PHOTOGRAPH BY JERRY VALENTE

The 5th Wave by Rich Tennant

YOU'RE NOT A CYBERHOLIC... if you look for the
Soup of the Day in the Format menu.

—RICH TENNANT



Inside Lines

Giving consent

The Justice Department's new antitrust chief, Anne Bingaman, last week assigned its investigation of IBM's outsourcing practices to Ralph Giordano in its New York office. At issue is whether IBM and its Integrated Systems Solutions Corp. subsidiary are in violation of a 1956 Consent Decree. IBM said Justice has transferred all Consent Decree cases to regional offices. Meanwhile, more questions swirled following IBM's services reorganization in which ISSC was intermingled with other IBM groups. The Consent Decree requires arms-length operation of a "service bureau" unit.

Chapter 11 redux?

Memorex Telex Corp., the U.S. subsidiary of Dutch Memorex Telex N.V., plans to file for Chapter 11 bankruptcy protection this month, the second time in two years. The storage products maker, which pulled in more than \$500 million in sales last year, cannot meet interest payments on \$600 million in debt held by financiers Carl Icahn and Leon Black, said a source close to the company. Memorex Telex does not expect to be in Chapter 11 for more than the minimum 30 days required to restructure the debt and convert it to common stock, which Icahn and Black will own, the source said.

Microsoft to say "OLE!" to Corba?

Dec. 8 is the deadline for those responding to the Object Management Group's (OMG) request for technology for the interoperability standard for Corba, and sources close to Microsoft and Digital said the two companies are likely to make a joint announcement on Dec. 7 with a major third-party relational database vendor to link OLE with Corba on. Digital already offers interoperability support between Microsoft's OLE and Corba, and Microsoft is likely to announce its intent to offer OLE's object interfaces to the OMG for Corba, the sources said. Microsoft officials said they have no current plans to do so.

Back on board

A rejuvenated Everex Systems will next Monday introduce a bold new line of desktops, featuring on-board support for Ethernet and 10Base-T, video acceleration, SCSI-2 and sound, as well as the more common on-board I/O and integrated drive electronics support. While graphics acceleration is built-in, Everex handles sound and SCSI via an on-board socket that allows users to pop in Adaptec, Inc.'s SCSI-2 chip. An intelligent BIOS automatically senses which components are on the machine and configures it appropriately. The cost for a fully configured system will range from \$1,299 for a 25-MHz 486SX chip to \$2,249 for a 33/66-MHz DX2 chip.

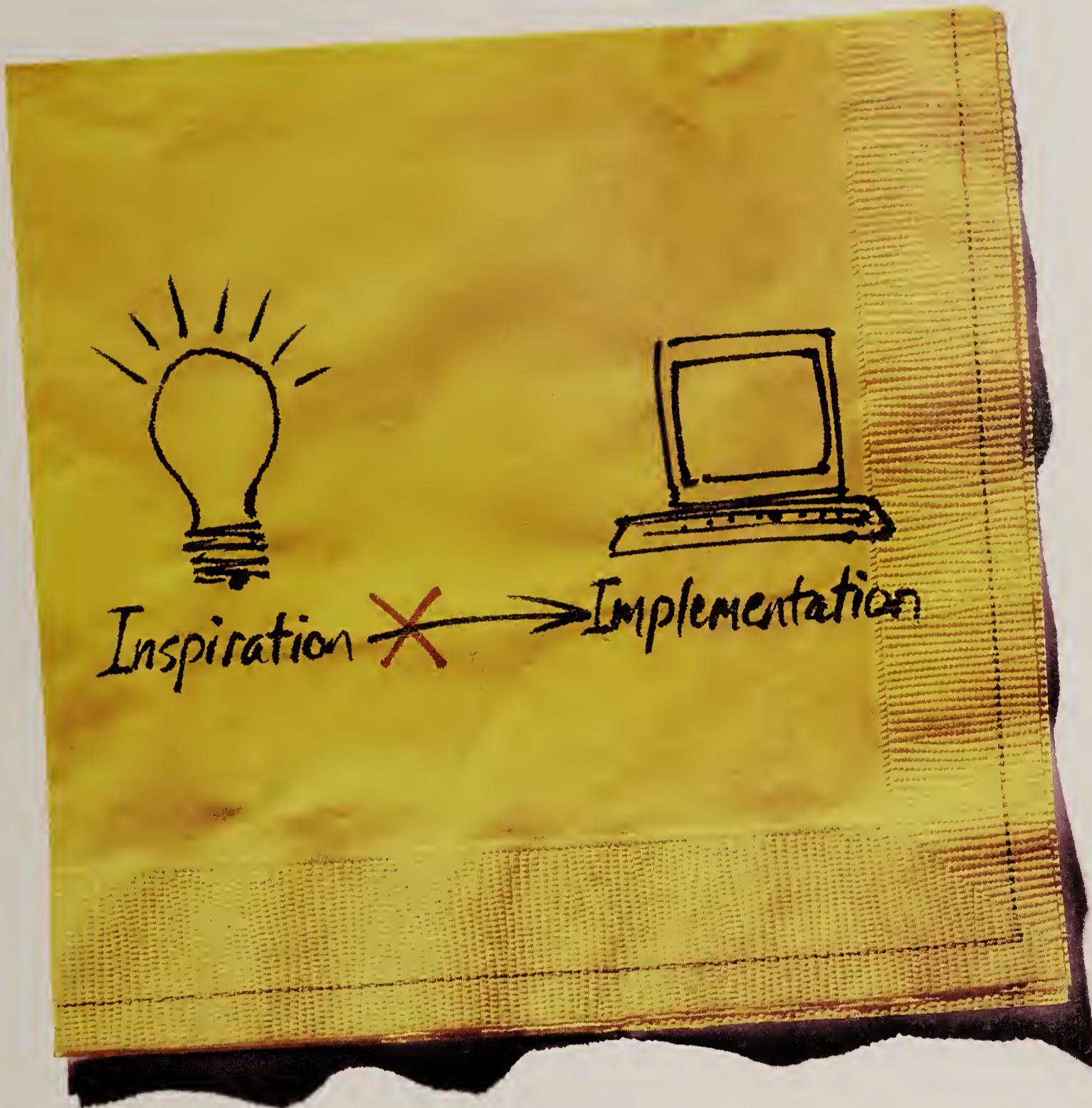
The more things change...

A slide that Novell presented at a recent analyst meeting lays out one piece of its strategy for selling enterprise computing systems to corporate IS. Titled "Extending strategy to deliver full IT solutions: Systems reseller channel second to none," the slide talked about upping the overall quality of Novell's value-added reseller support. Between 1991 and 1994, Novell will up the number of high-quality Platinum resellers from 225 to 700.

Value days are over

Two months after refreshing the low end of its PC line, Digital is ready to upgrade higher-end models. Models based on Intel's microprocessors and Digital's own Alpha AXP devices are expected to be introduced next week, in both EISA and Peripheral Component Interconnect flavors.

In the "state of the industry" department, Dave Duffield, head of client/server software maker PeopleSoft, said he didn't want to be introduced as "chairman" at a product announcement last week (see story page 28). "Chairman" generally means you're on your way out," Duffield said, referring to several recently departed computer company chairmen, such as John Sculley from Apple and John Akers from IBM. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.



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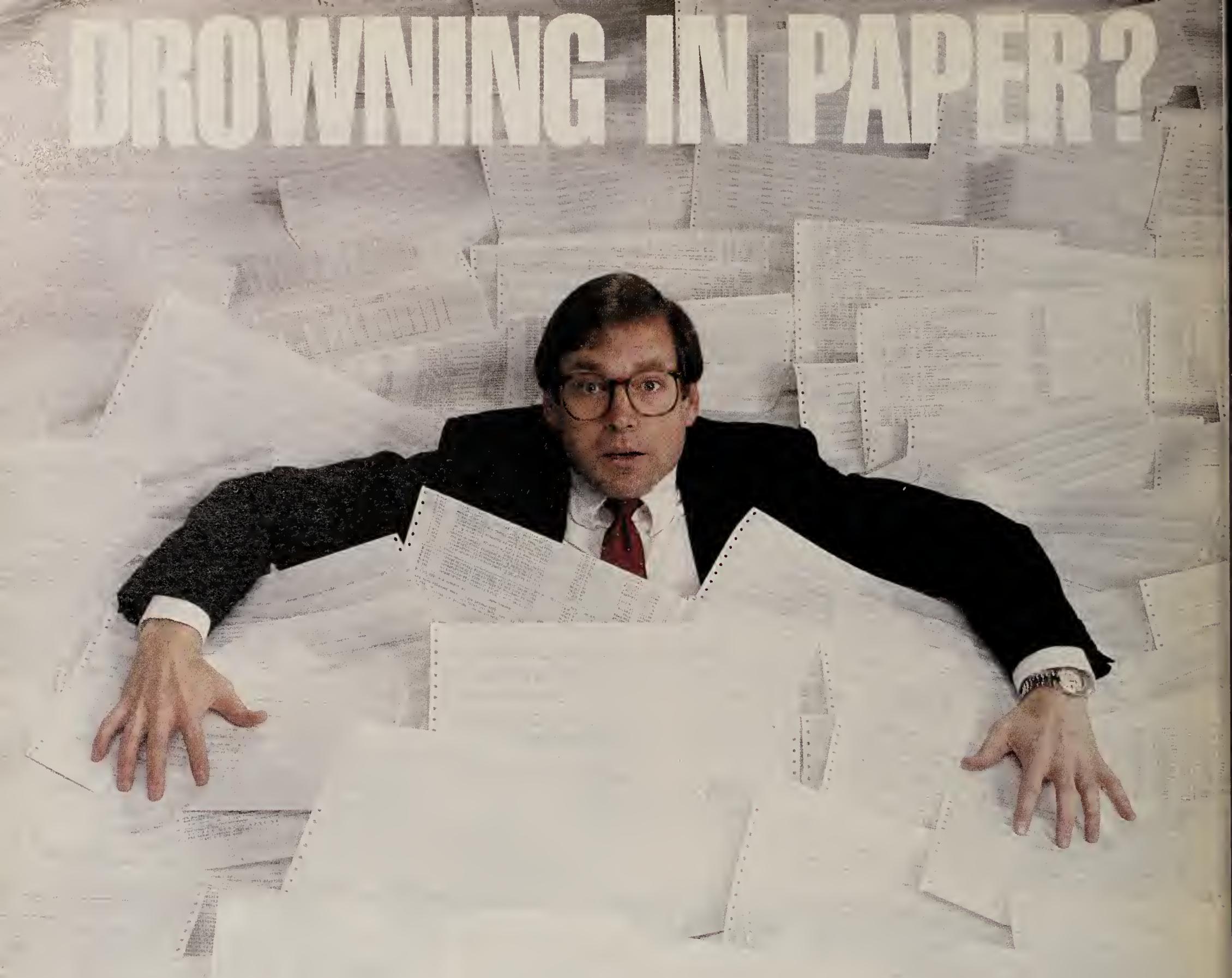
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